October 20, 2021
(Revised May 9, 2022)

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Subject: Report for 2021 Second Consecutive Groundwater Sampling at the House of Harley 4334 Spenard Road, Anchorage, AK 99517 - ADEC File # 2100.38.425. RSE Project Number: 21-2339. Revised May 9, 2022.

Ms. Hall:

Restoration Science & Engineering, LLC (RSE), on behalf of Ourtrust LLC, is providing this report, detailing a second consecutive round of groundwater monitoring at MW-1, MW-2, and MW-6. On June 22, 2021, RSE submitted a report (revision 1) for the installation of two new monitoring wells (MW-5 & MW-6). Additionally, RSE collected groundwater samples from both new wells and three other sampleable preexisting wells on site (MW-1, MW-2, MW-3), (RSE, 2021b).

On July 28, 2021, RSE received Alaska Department of Environmental Conservation (ADEC) response comments. On August 23, 2021, RSE submitted a revised report (revision 2) that addressed the ADEC comments (RSE, 2021c). On September 1, 2021, RSE received report approval from the ADEC. With this approval ADEC requested a second round of groundwater sampling from MW-1, MW-2, and MW-6 to fulfill the eligibility for closure. The wells were sampled on September 22, 2021 and the requested sampling data is presented in this report.

The site is located at the northwest corner of the intersection of Barbara Drive and Spenard Road in Anchorage and is listed under file 2100.38.425 in the ADEC contaminated sites database. A Vicinity Map is included as Figure 1 in Attachment A. The House of Harley property legal description is Tract 2A, Willard Subdivision Addition No. 2, Anchorage, Alaska, and the project area is shown on Figure 2 and 3 in Attachment A.

## GROUNDWATER CONTAMINANTS OF CONCERN AND SAMPLING METHODS

Based on the known contaminant (heating oil) and results from previous investigations, the groundwater contaminants of concern, laboratory analytical method and cleanup levels are provided in Table 1, on the next page.

*Table 1. Contaminants of Potential Concern in Groundwater – 18 AAC 75 Table C*

| COPC | Matrix | COPC Abbreviation | ADEC-Approved Lab Method | ADEC Table C Groundwater Cleanup Level |
|---|---|---|---|---|
| Diesel Range Organics | Water | DRO | AK 102 | 1.5 mg/L |
| Gasoline Range[3] Organics | Water | GRO | AK 101 | 2.2 mg/L |
| Benzene[3] | Water | Collectively referred to as BTEX[1] | EPA 8260C | 4.6 ug/L |
| Toluene[3] | Water | | | 1,100 ug/L |
| Ethylbenzene[3] | Water | | | 15 ug/L |
| Total Xylenes[3] | Water | | | 190 ug/L |
| Volatile Organic[3] Compounds | Water | Petro VOCs | EPA 8260C | Varies[2] |
| Polynuclear Aromatic[3] Hydrocarbons | Water | PAH SIM | EPA 8270D | Varies[2] |

[1] *BTEX analyses are included in the Petro VOC sampling suite*

[2] *Petro VOC and PAH cleanup levels as per 18 AAC 75*

[3] *GRO, BTEX, Petro VOC and PAH analyses was collected for monitoring well MW-6 only*

On September 22, 2021, RSE Qualified Environmental Professional (QEP) Kyle Wiseman mobilized to the site and collected a second consecutive round of groundwater monitoring samples. Groundwater samples were collected from MW-1, MW-2, and MW-6. RSE measured the depth to the top of groundwater and the bottom of each well to determine the length of the water column and calculated the volume of water to be purged prior to sample collection. Both measurements were collected using a Solinst water level indicator from a permanent mark (measuring point) at the north side of the top of the PVC casing.

For sampling, RSE removed approximately three well volumes from each well using a low-flow peristaltic pump while monitoring water quality parameters with a YSI 556. The YSI was calibrated for pH and specific conductance onsite prior to well purging. Monitoring well sampling was performed in accordance with EPA Low Flow (minimal draw down) Groundwater Sampling Procedures. During purging and sampling, RSE maintained the intake end of peristaltic pump tubing within the top one foot of the water column. Water samples were collected as per workplan (RSE, 2021a) approval with a low flow peristaltic pump for sampling. Negative pressure pumps i.e., peristaltic pumps may result in loss of volatiles during sampling. RSE maintained constant water volume within the tubing during sampling and therefore considers this issue de minimis. RSE further notes that MW-2 is a microwell and the 1-inch diameter does not allow the use of a submersible pump.

Groundwater samples were collected using new, dedicated tubing for each well. The water level indicator and all other equipment that was not disposable was decontaminated between wells with

a distilled water and Alconox wash followed by a distilled water rinse, in a three-stage decontamination process. RSE sampled in order from the least-contaminated well to the most-contaminated well to minimize potential cross-contamination. The sampling sequence was MW-6, MW-1, MW-2. A duplicate sample MW-X was collected along with primary sample MW-6 and submitted blind to the laboratory for quality control purposes.

As groundwater samples were collected, care was taken to minimize the loss of volatile components through excessive agitation or air mixing. Samples analyzed for volatile constituents were collected before nonvolatile constituents. Field personnel avoided spilling or over-diluting acid preserved samples. Water samples were collected from tubing during purging directly into method specific containers and stored in a clean sample cooler chilled to between 0° and 6° C. The cooler was transported under chain-of-custody to ADEC-approved laboratory, SGS North America, Inc. located in Anchorage, Alaska. Table 2 shows the containers, preservation, and holding times for the laboratory analyses of groundwater samples.

*Table 2. Containers, Preservation, and Holding Times for Groundwater Samples*

| COPC | Matrix | Lab Method | Sample Container | Preservation | Holding Time |
|---|---|---|---|---|---|
| DRO | Water | AK 102 | 1x 250 mL glass Teflon-lined cap | HCl<br>0 – 6° C | 14 days to Extract 40 days to Analysis |
| GRO | Water | AK 101 | 3x 40 mL Volatile organic analysis (VOA) vials, minimize headspace | HCl<br>0 – 6° C | 14 days to Analysis |
| BTEX/ Petro VOCs | Water | EPA 8260C | 3x 40 mL Volatile organic analysis (VOA) vials, minimize headspace | HCl<br>0 – 6° C | 14 days to Analysis |
| PAH SIM | Water | EPA 8270D | 2x 250 mL amber jar with Teflon lined cap | 0 – 6° C | 7 days to Extract<br>40 days to Analysis |

Purge and decontamination water was filtered through a granular activated carbon (GAC) onsite into a vegetated area immediately after development. No sheen, odor, or any other olfactory evidence of hydrocarbon impacts were observed. Water was filtered within the site boundaries and greater than 100 feet from any drinking water wells or surface water.

## GROUNDWATER SAMPLING RESULTS

Groundwater sample results showed all wells to be below ADEC Table C groundwater cleanup levels for a second consecutive sampling event. MW-2 yielded a DRO result of 1.30 mg/L, below the 1.5 mg/L cleanup level. MW-1 also had detectable DRO below the cleanup level with a result of 0.654 mg/L. DRO was detected below the limit of quantitation (LOQ) in both MW-6 and the duplicate, yielding a result of 0.385 J mg/L and 0.367 J mg/L respectively. GRO was also detected above the detection limit but below the LOQ in the duplicate collected at MW-6, with a value of

0.0917 J mg/L. However, GRO was not detected in the primary sample. RSE suggests it is possible the detection resulted due to exhaust exposure from passing vehicles during sampling. MW-6 is located directly adjacent to Barbara Drive and several vehicles passed and occasionally idled at the nearby stop sign during sample collection. Samples collected at MW-6 were also analyzed for Petro VOCs and PAH's. Results were below the limit of detection apart from PAH Phenanthrene, which was detected in both the primary and duplicate sample below the LOQ with values of 0.0158 J µg/L and 0.0213 J µg/L respectively. Both are considerably below the 170 µg/L cleanup level.

## GROUNDWATER SURVEY AND GRADIENT

RSE conducted an elevation survey of monitoring well measuring points on May 13, 2021. A temporary benchmark (TBM-1) assigned an arbitrary datum of 100.00 ft was established on a concrete slab under the awning on the northwest side of the building. RSE used a Leica self-leveling level to conduct an elevation survey. Measuring points were established on the north side of the 2-inch PVC or 1-inch steel well casing.

RSE collected depth to water measurements prior to sampling each well. Additional depth to water measurements were collected on October 10, 2021, which included MW-5 to provide more gradient data. RSE used the measuring point data along with static depth to water measurements to generate a groundwater contour map using Surfer™ (Figures 2 and 3, Attachment A). The elevation survey and groundwater elevation data and calculations are provided in Attachment C.

## INVESTIGATIVE DERIVED WASTE

Consumables such as tubing, gloves, and paper towels were placed into a trash receptacle for disposal. Non-consumables such as the water level indicator were decontaminated using a three-stage decontamination system with Alconox and water between sampling and measuring at each well. Tubing for water samples was dedicated to each well and disposed of following use. No sheen was observed in the purge or sample water, thus RSE discharged the purge and decontamination water onto a permeable surface location on the subject property after processing it through a GAC filter at the conclusion of sampling and measuring.

## QUALITY ASSURANCE AND QUALITY CONTROL

All samples were collected in accordance with applicable ADEC regulation and guidance documents by a Qualified Environmental Professional. Blind duplicate samples were collected at a frequency of 10%, with no less than one blind duplicate sample collected. RSE submitted one trip blank with each sample cooler containing volatile samples. Water samples were received at 2.8° C, within the prescribed temperature range of 0° to 6° C. Water quality instruments were cleaned and calibrated prior to field use. The YSI was calibrated for pH and specific conductance onsite prior to well purging. ADEC Laboratory Review checklist was completed for each laboratory report received. In summary the data was found to be usable for the intended purpose

of comparison to ADEC groundwater cleanup levels. Laboratory reports and the ADEC Laboratory Review Checklist are provided in Attachment D. Selected site photographs are provided in Attachment E. The RSE QEP maintained field notes provided in Attachment F. Field notes documented site activities, sample locations, and matrices sampled.

## CONCEPTUAL SITE MODEL

A conceptual site model is provided in Attachment G. Based on the data provided in this report, the subject site does not pose an unacceptable risk to human health or the environment.

## SUMMARY AND CONCLUSIONS

Groundwater samples were collected from MW-1, MW-2, MW-6. All results were below ADEC cleanup levels. RSE believes this new and existing data adequately defines the horizontal and vertical extent of residual hydrocarbon impacts and moreover all groundwater cleanup levels are met at the site. Based on this, and the findings of the attached conceptual site model, RSE proposes the site be evaluated for issuance of a Cleanup Complete status with no further action required.

All groundwater and soil samples were collected by an ADEC QEP. Please contact David Nyman at (907) 278-1023 if you have any questions or comments. This report was prepared by an ADEC QEP in accordance with 18 AAC 75.

David Nyman, PE

RESTORATION SCIENCE & ENGINEERING, LLC

**ATTACHMENT A**

Figures

Figure 1 - Vicinity Map

Figure 2 –Groundwater Gradient Map – September 22, 2021

Figure 3 - Groundwater Gradient Map – October 10, 2021

**ATTACHMENT B**

Tabulated Laboratory Results

Table B-1: Groundwater Well Quality Field Parameters

Table B-2: Hydrocarbons and BTEX in Groundwater

Table B-3: Petro VOCs in Groundwater

Table B-4: Polynuclear Aromatic Hydrocarbons in Groundwater

Table B-5: Historical Groundwater Sample Results

**ATTACHMENT C**

Elevation Survey and Groundwater Elevation Data

Table C-1: Groundwater Elevations

**ATTACHMENT D**

Lab Reports and ADEC Laboratory QC Checklist

**ATTACHMENT E**

Select Site Photographs

**ATTACHMENT F**

Scanned Field Notes

**ATTACHMENT G**

Conceptual Site Model

## REFERENCES

RSE, 2021a. Work Plan for 2021 Additional Site Assessment and Groundwater sampling at the House of Harley 4334 Spenard Road, Anchorage, AK 99517. ADEC File #2100.38.425, Revision 1, February 23, 2021.

RSE, 2021b. Report for 2021 Additional Site Assessment and Groundwater Sampling at the House of Harley, 4334 Spenard Road, Anchorage, AK 99517 - ADEC File # 2100.38.425, Revision 1, June 22, 2021.

RSE, 2021c. Report for 2021 Additional Site Assessment and Groundwater Sampling at the House of Harley 4334 Spenard Road, Anchorage, AK 99517 - ADEC File # 2100.38.425, Revision 2, August 23, 2001.

# ATTACHMENT A

## Figures

Figure 1 - Vicinity Map

Figure 2 –Groundwater Gradient Map – September 22, 2021

Figure 3 - Groundwater Gradient Map – October 10, 2021

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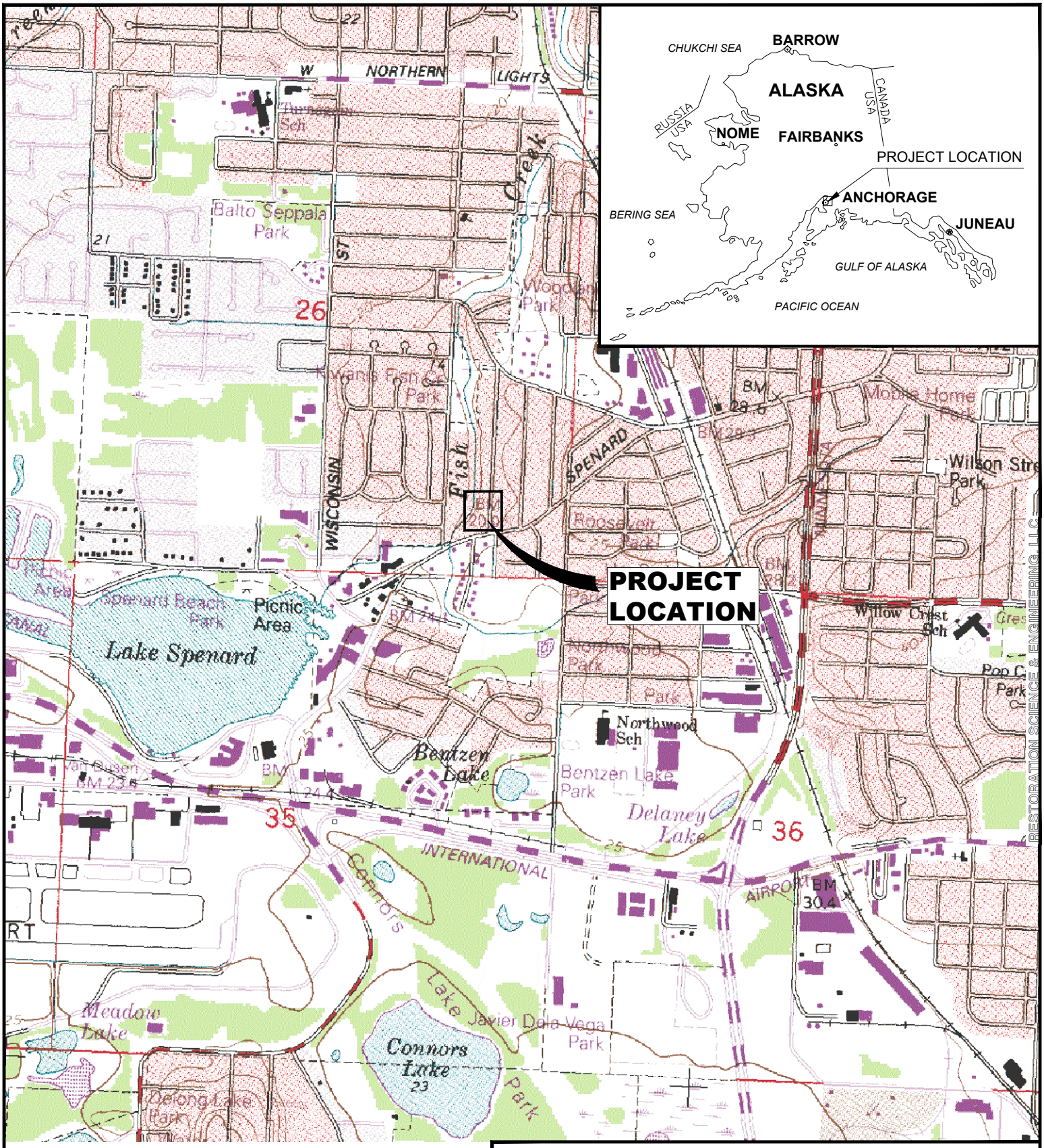


N.T.S.

**HOUSE OF HARLEY**
**4332 SPENARD ROAD**

**VICINITY MAP**

**ANCHORAGE, ALASKA**

| | |
|---|---|
| JOB NO: 20.2256 | DRAWN: MSB |
| DATE: 10.10.2020 | CHECKED: DN |

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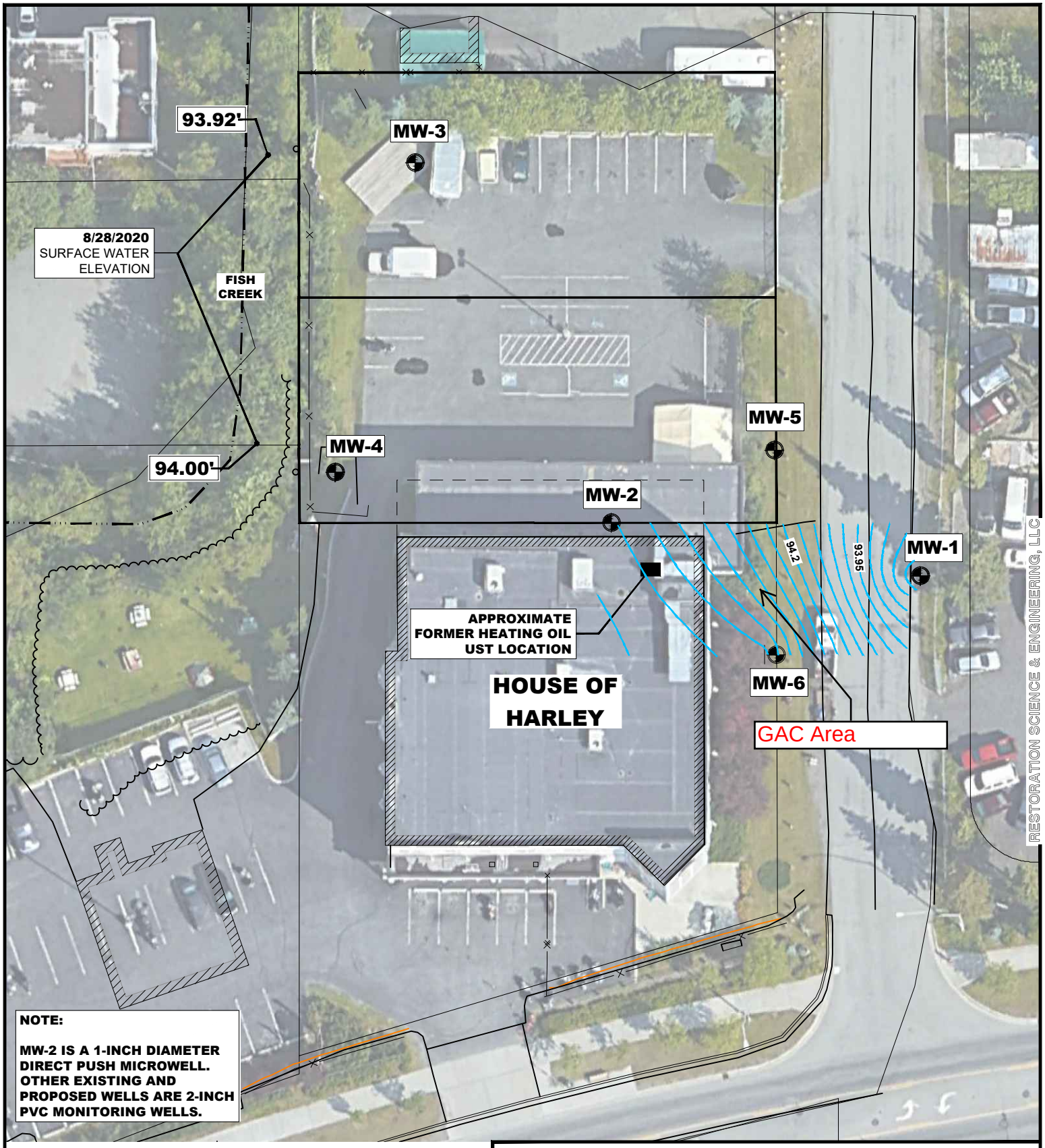
**FIGURE 1**

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LEGEND

GROUNDWATER MONITORING WELL LOCATION

94.2 GROUNDWATER CONTOUR
9/22/2021 MEASUREMENTS

20 0 40

GRAPHIC SCALE
1"=40'

# HOUSE OF HARLEY
# 4332 SPENARD ROAD

**SEPTEMBER 22, 2021**
**GROUNDWATER GRADIENT MAP**

**ANCHORAGE, ALASKA**

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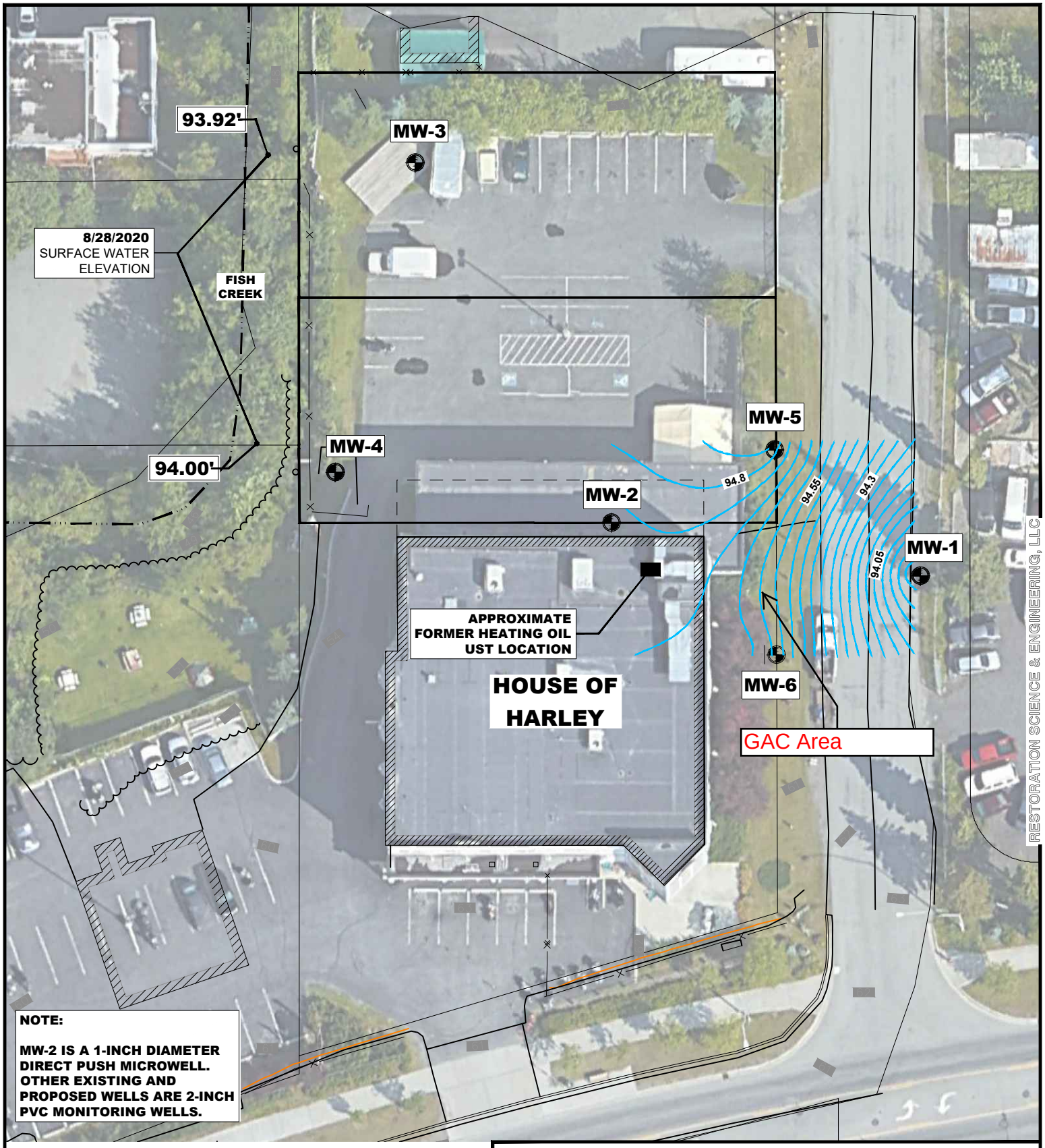
| | |
|---|---|
| JOB NO: 21.2339 | DRAWN: MSB |
| DATE: 10.17.2021 | CHECKED: KW |

**FIGURE 2**

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LEGEND

GROUNDWATER MONITORING WELL LOCATION

94.55 GROUNDWATER CONTOUR
10/10/2020 MEASUREMENTS

20 0 40

GRAPHIC SCALE
1"=40'

# HOUSE OF HARLEY
# 4332 SPENARD ROAD

**OCTOBER 10, 2021**
**GROUNDWATER GRADIENT MAP**

**ANCHORAGE, ALASKA**

| | |
|---|---|
| JOB NO: 21.2339 | DRAWN: MSB |
| DATE: 10.17.2021 | CHECKED: KW |

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**FIGURE 3**

# ATTACHMENT B

## Tabulated Laboratory Results

Table B-1: Groundwater Well Quality Field Parameters

Table B-2: Hydrocarbons and BTEX in Groundwater

Table B-3: Petro VOCs in Groundwater

Table B-4: Polynuclear Aromatic Hydrocarbons in Groundwater

Table B-5: Historical Groundwater Sample Results

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**Table B-1**
**House of Harley**
**Additional Site Assessment**
**Groundwater Quality Field Parameters**
**Sample Date September 2021**

| GROUNDWATER QUALITY FIELD PARAMETERS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOCATION** | **DATE** | **DEPTH TO WATER (feet)** | **DEPTH TO BOTTOM (feet)** | **TIME (hh:mm)** | **TOTAL WATER REMOVED (gal)** | **TEMPERATURE (°C)** | **pH (pH Units)** | **CONDUCTIVITY ( µS/cm)** | **SPECIFIC CONDUCTANCE (mS/cm)** | **$O_2$ (mg/L)** | **ORP millivolts (mV)** |
| **MW-1** | | | | | | | | | | | |
| MW-1 | 9/22/2021 | 11.85 | 17.95 | 1314 | Begin Purge | | | | | | |
| | | < 12.5 | | 1318 | 0.5 | 7.35 | 6.65 | 260 | 0.393 | 4.68 | -145.9 |
| | | < 12.5 | | 1327 | 1.5 | 6.95 | 6.6 | 324 | 0.495 | 2.29 | -108.2 |
| | | < 12.5 | | 1336 | 2.25 | 6.87 | 6.61 | 330 | 0.504 | 1.89 | -97.8 |
| | | < 12.5 | | 1347 | 3.25 | 6.82 | 6.62 | 330 | 0.505 | 4.01 | -91.7 |
| **MW-2** | | | | | | | | | | | |
| MW-2 | 9/22/2021 | 4.65 | 14.92 | 1415 | Begin Purge | | | | | | |
| | | < 14.0 | | 1425 | 1 | 9.15 | 7.79 | 371 | 0.533 | 6.5 | -61.1 |
| | | < 14.5 | | 1430 | Well Purged Dry, Wait for Recharge (Poor) | | | | | | |
| | | < 13.0 | | 1455 | 2 | 8.62 | 7.11 | 374 | 0.544 | 6.26 | -43.8 |
| | | < 13.0 | | 1520 | 2.5 | 8.31 | 7.1 | 380 | 0.555 | 5.78 | -41.0 |
| **MW-6** | | | | | | | | | | | |
| MW-6 | 9/22/2021 | 11.94 | 16.48 | 1155 | Begin Purge | | | | | | |
| | | < 12.5 | | 1200 | 0.75 | 8.80 | 6.19 | 232 | 0.335 | 2.77 | 23.2 |
| | | < 12.5 | | 1205 | 1 | 8.34 | 6.42 | 209 | 0.307 | 4.3 | 16.1 |
| | | < 13.0 | | 1210 | 1.50 | 8.32 | 6.41 | 211 | 0.309 | 4.86 | 13 |
| | | < 13.0 | | 1220 | 2.25 | 8.26 | 6.53 | 212 | 0.312 | 4.51 | 8.7 |
| | | < 13.0 | | 1250 | 3 | 8.27 | 6.64 | 208 | 0.306 | 4.8 | 5.2 |

**NOTES:**

1) Water quality measurements performed using a YSI Model 556 Water Quality Meter.
2) Purging of well was done with a peristaltic pump.
3) µS/cm = microsiemens per centimeter.
4) mS/cm = millisiemens per centimeter.
5) (<) Indicates the peristaltic pump tubbing was deployed just below the water level indicator probe, which was maintained within the top 1 foot of the water column during purging and sampling.

**Table B-2**
**House of Harley**
**Additional Site Assessment**
**Hydrocarbons in Groundwater**
**Sample Date September 2021**

| HYDROCARBONS IN GROUNDWATER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SAMPLE ID | DATE | DIESEL RANGE ORGANICS (mg/L) | GASOLINE RANGE ORGANICS (mg/L) | BENZENE (µug/L) | TOLUENE (µg/L) | ETHYL-BENZENE (µg/L) | XYLENES (TOTAL) (µg/L) | SGS PROJECT NO. |
| MW-1 | 9/22/2021 | **0.654** | - | - | - | - | - | |
| MW-2 | 9/22/2021 | **1.30** | - | - | - | - | - | |
| MW-6 | 9/22/2021 | **0.385 J** | *0.0500 U* | *0.200 U* | *0.500 U* | *0.500 U* | *1.50 U* | 1216245 |
| MW-X | 9/22/2021 | **0.367 J** | **0.0917 J** | *0.200 U* | *0.500 U* | *0.500 U* | *1.50 U* | |
| Trip Blank | 9/22/2021 | - | *0.0500 U* | *0.200 U* | *0.500 U* | *0.500 U* | *1.50 U* | |
| **ADEC GROUNDWATER CLEANUP LEVELS TABLE C (18 AAC 75)** | | **1.5** | **2.2** | **4.6** | **1100** | **15** | **190** | |

**NOTES:**
1) GRO samples analyzed by AK Method 101; DRO samples analyzed by AK Method 102; BTEX samples by SW8260D
2) "mg/L" means "milligrams per liter"; "µg/L" means "micrograms per liter"
3) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL)
4) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the LOD
5) J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ
6) "-" indicates the analyte was not sampled for the investigation area per Workplan
7) Light yellow highlighting indicates the sample analyte was detected above ADEC Table C groundwater cleanup levels
8) Sample MW-X is a blind duplicate of sample MW-6

**Table B-3**
**House of Harley**
**Additional Site Assessment**
**Petro Volatile Organic Compounds in Groundwater**
**Sample Date September 2021**

| PETRO VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER | | | | |
|---|---|---|---|---|
| **SAMPLE ID** | MW-6 | MW-X | Trip Blank | **ADEC Table C** |
| **Date** | 9/22/2021 | 9/22/2021 | 9/22/2021 | **Groundwater Cleanup** |
| **SGS Work Order** | 1212380 | 1212380 | 1212380 | **Levels** |
| **Units** | (µg/L) | (µg/L) | (µg/L) | **(µg/L)** |
| 1,2,4-Trimethylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 56 |
| 1,2-Dibromoethane | *0.0375 U* | *0.0375 U* | *0.0375 U* | 0.075 |
| 1,2-Dichloroethane | *0.250 U* | *0.250 U* | *0.250 U* | 1.7 |
| 1,3,5-Trimethylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 60 |
| Benzene | *0.200 U* | *0.200 U* | *0.200 U* | 4.6 |
| Ethylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 15 |
| Isopropylbenzene (Cumene) | *0.500 U* | *0.500 U* | *0.500 U* | 450 |
| Methyl-t-butyl ether | *5.00 U* | *5.00 U* | *5.00 U* | 140 |
| Naphthalene | *0.500 U* | *0.500 U* | *0.500 U* | 1.7 |
| P & M -Xylene | *1.00 U* | *1.00 U* | *1.00 U* | See Total Xylenes |
| Toluene | *0.500 U* | *0.500 U* | *0.500 U* | 1,100 |
| Xylenes (total) | *1.50 U* | *1.50 U* | *1.50 U* | 190 |
| n-Butylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 1,000 |
| o-Xylene | *0.500 U* | *0.500 U* | *0.500 U* | See Total Xylenes |
| sec-Butylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 2,000 |
| tert-Butylbenzene | *0.500 U* | *0.500 U* | *0.500 U* | 690 |

**NOTES:**

1) Volatile organic compounds (VOC) analyses by Method EPA SW8260D
2) "µg/L" means "micrograms per Liter"
3) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL)
4) *Italicized* font with a U-qualifier indicates the analyte was not detected above the limit of detection (LOD); the value presented is the LOD
5) J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ
6) Yellow highlighting indicates the analyte was detected above the ADEC Table C groundwater cleanup levels
7) Blue highlighting indicates the method detection limit was greater than the ADEC Table C groudnwater cleanup levels
8) Sample MW-X is a blind duplicate of sample MW-6

**Table B-4**
**House of Harley**
**Additional Site Assessment**
**Polynuclear Aromatic Hydrocarbons in Groundwater**
**Sample Date September 2021**

| POLYNUCLEAR AROMATIC HYDROCARBONS IN GROUNDWATER | | | |
|---|---|---|---|
| **SAMPLE ID** | MW-6 | MW-X | **ADEC TABLE C GROUNDWATER CLEANUP LEVELS** |
| **DATE** | 9/22/2021 | 9/22/2021 | |
| **UNITS** | µg/L | µg/L | µg/L |
| 1-Methylnaphthalene | *0.0240 U* | *0.0240 U* | 11 |
| 2-Methylnaphthalene | *0.0240 U* | *0.0240 U* | 36 |
| Acenaphthene | *0.0240 U* | *0.0240 U* | 530 |
| Acenaphthylene | *0.0240 U* | *0.0240 U* | 260 |
| Anthracene | *0.0240 U* | *0.0240 U* | 43 |
| Benzo(a)Anthracene | *0.0240 U* | *0.0240 U* | 0.30 |
| Benzo[a]pyrene | *0.00960 U* | *0.00960 U* | 0.25 |
| Benzo[b]Fluoranthene | *0.0240 U* | *0.0240 U* | 2.50 |
| Benzo[g,h,i]perylene | *0.0240 U* | *0.0240 U* | 0.26 |
| Benzo[k]fluoranthene | *0.0240 U* | *0.0240 U* | 0.80 |
| Chrysene | *0.0240 U* | *0.0240 U* | 2.00 |
| Dibenzo[a,h]anthracene | *0.00960 U* | *0.00960 U* | 0.25 |
| Fluoranthene | *0.0240 U* | *0.0240 U* | 260 |
| Fluorene | *0.0240 U* | *0.0240 U* | 290 |
| Indeno[1,2,3-c,d] pyrene | *0.0240 U* | *0.0240 U* | 0.19 |
| Naphthalene | *0.0481 U* | *0.0481 U* | 1.7 |
| Phenanthrene | **0.0158 J** | **0.0213 J** | 170 |
| Pyrene | *0.0240 U* | *0.0240 U* | 120 |

**NOTES:**

**1)** PAH analyses by Method EPA 8270D SIM LV (PAH)

**2)** Light yellow highlighting indicates analyte measured above ADEC Table C groundwater cleanup levels

**3)** Bold font indicates the analyte was detected above the laboratory Detection Limit (DL)

**4)** *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; The value presented is the LOD

**5)** J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ

**6)** Sample MW-X is a blind duplicate of sample MW-6

**TABLE B-5**
**HYDROCARBONS AND PETRO VOCS IN GROUNDWATER**
**HOUSE OF HARLEY**
**2002 DOWL, 2020 RSE, 2021 RSE (2)**

| HYDROCARBONS AND PETRO VOCS IN GROUNDWATER | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WELL ID** | MW-1 | | | | | MW-2 | | | | MW-3 | | | | MW-4 | | MW-5 | | MW-6 | | | Units | **GROUNDWATER CLEANUP LEVELS** |
| **EVENT ID** | DOWL, 2003 | RSE, 2020 | | RSE, 2021 | RSE, 2021 | DOWL, 2003 | RSE, 2020 | RSE, 2021 | RSE, 2021 | DOWL, 2003 | | RSE, 2020 | RSE, 2021 | DOWL, 2003 | RSE, 2020 | RSE, 2021 | | RSE, 2021 | RSE, 2021 | | | |
| **SGS LABORATORY REPORT** | 1026911 | 1204623 | | 1212380 | 1216245 | 1026911 | 1204623 | 1212380 | 1216245 | 1026911 | | 1204623 | 1212380 | 1026911 | 1204623 | 1212380 | | 1212380 | 1216245 | | | |
| **DATE** | 10/11/2002 | 8/28/2020 | | 5/13/2021 | 9/22/2021 | 10/11/2002 | 8/28/2020 | 5/13/2021 | 9/22/2021 | 10/11/2002 | | 8/28/2020 | 5/12/2021 | 10/11/2002 | 8/28/2020 | 5/12/2021 | | 5/12/2021 | 9/22/2021 | | | |
| Gasoline Range Organics | - | **0.0841 J** | **0.0885 J** | **-** | **-** | - | 0.0500 U | **-** | **-** | - | | **0.0371 J** | **-** | - | **0.0382 J** | *0.0500 U* | *0.0500 U* | *0.0500 U* | *0.0500 U* | **0.0917 J** | mg/L | 2.2 |
| Diesel Range Organics | **2.24** | **1.18** | **1.18** | **0.803** | **0.654** | *0.535 U* | **1.82** | **1.21** | **1.30** | **0.547** | **0.674** | **0.666** | **1.44** | **0.516** | **0.664** | **1.12** | **1.08** | **0.822** | **0.385 J** | **0.367 J** | mg/L | 1.5 |
| 1,2,4-Trimethylbenzene | - | *0.500 U* | *0.500 U* | - | - | - | *0.500 U* | - | - | - | - | *0.500 U* | - | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 56 |
| 1,2-Dibromoethane | - | *0.0375 U* | *0.0375 U* | - | - | - | *0.0375 U* | - | - | - | - | *0.0375 U* | - | - | *0.0375 U* | *0.0375 U* | *0.0375 U* | *0.0375 U* | *0.0375 U* | *0.0375 U* | ug/L | 0.075 |
| 1,2-Dichloroethane | - | *0.250 U* | *0.250 U* | - | - | - | **0.181 J** | - | - | - | - | *0.250 U* | - | - | *0.250 U* | *0.250 U* | *0.250 U* | *0.250 U* | *0.250 U* | *0.250 U* | ug/L | 1.7 |
| 1,3,5-Trimethylbenzene | - | **0.525 J** | *0.500 U* | - | - | - | *0.500 U* | - | - | - | - | *0.500 U* | - | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 60 |
| Benzene | *0.000500 U* | *0.200 U* | *0.200 U* | - | - | *0.000500 U* | *0.200 U* | - | - | *0.000500 U* | *0.000500 U* | *0.200 U* | - | *0.000500 U* | *0.200 U* | *0.200 U* | *0.200 U* | *0.200 U* | *0.200 U* | *0.200 U* | ug/L | 4.6 |
| Ethylbenzene | *0.00200 U* | *0.500 U* | *0.500 U* | - | - | *0.00200 U* | *0.500 U* | - | - | *0.00200 U* | *0.00200 U* | *0.500 U* | - | *0.00200 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 15 |
| Isopropylbenzene (Cumene) | - | **1.88** | **1.30** | **-** | **-** | - | *0.500 U* | **-** | **-** | - | - | *0.500 U* | **-** | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 450 |
| Methyl-t-butyl ether | - | *5.00 U* | *5.00 U* | - | - | - | *5.00 U* | - | - | - | - | *5.00 U* | - | - | *5.00 U* | *5.00 U* | *5.00 U* | *5.00 U* | *5.00 U* | *5.00 U* | ug/L | 140 |
| Naphthalene | - | *0.500 U* | *0.500 U* | - | - | - | *0.500 U* | - | - | - | - | *0.500 U* | - | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 1.7 |
| P & M -Xylene | *0.00200 U* | *1.00 U* | *1.00 U* | - | - | *0.00200 U* | *1.00 U* | - | - | *0.00200 U* | *0.00200 U* | *1.00 U* | - | *0.00200 U* | *1.00 U* | *1.00 U* | *1.00 U* | *1.00 U* | *1.00 U* | *1.00 U* | ug/L | See Total Xylenes |
| Toluene | *0.00200 U* | *0.500 U* | *0.500 U* | - | - | *0.00200 U* | *0.500 U* | - | - | *0.00200 U* | *0.00200 U* | *0.500 U* | - | **0.00896** | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 1,100 |
| Xylenes (total) | - | *1.50 U* | *1.50 U* | - | - | - | *1.50 U* | - | - | - | - | *1.50 U* | - | - | *1.50 U* | *1.50 U* | *1.50 U* | *1.50 U* | *1.50 U* | *1.50 U* | ug/L | 190 |
| n-Butylbenzene | - | **1.92** | **1.33** | **-** | **-** | - | *0.500 U* | **-** | **-** | - | - | *0.500 U* | **-** | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 1,000 |
| o-Xylene | **0.00235** | 0.500 U | 0.500 U | - | - | *0.00200 U* | *0.500 U* | - | - | *0.00200 U* | *0.00200 U* | *0.500 U* | - | *0.00200 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | See Total Xylenes |
| sec-Butylbenzene | - | **9.81** | **6.52** | **-** | **-** | - | *0.500 U* | **-** | **-** | - | - | *0.500 U* | **-** | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 2,000 |
| tert-Butylbenzene | - | **0.701 J** | **0.537 J** | **-** | **-** | - | *0.500 U* | **-** | **-** | - | - | *0.500 U* | **-** | - | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | *0.500 U* | ug/L | 690 |

**NOTES:**

1) GRO analyses by Method AK101, DRO analyses by Method AK102, volatile analyses by Method SW8260D, Historical BTEX data by Method 8021B.
2) Bold font indicates the analyte was detected above the laboratory Detection Limit (DL)
3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection (LOD)
4) J flag indicates the result is an estimated value above the Detection Limit (DL) but less than the LOQ
5) Yellow highlighting indicates the analyte was detected above the 18 AAC 75.345. Groundwater Cleanup Levels
6) Duplicate collected at MW-1, MW-5, and MW-6 by RSE, Duplicated collected at MW-3 by DOWL.
7) Blue highlighting indicates the method Detection Limit (DL) is above the ADEC Groundwater Cleanup Level

# ATTACHMENT C

## Elevation Survey and Groundwater Elevation Data

Table C-1: Groundwater Elevations

RESTORATION Science & Engineering, LLC

**Table C-1**
**House of Harley**
**Additional Site Assessment**
**Elevation Survey 5-13-2021**

| Elevation Survey 5-13-2021 | | | | |
|---|---|---|---|---|
| **STATION** | **+** | **-** | **H I** | **ELEV.** |
| TBM-1 (see note) | 10.58 | | 110.58 | 100.00 |
| MW-3 | | 9.510 | | 101.07 |
| MW-2 | | 11.360 | | 99.22 |
| MW-5 | | 7.650 | | 102.93 |
| MW-6 | | 4.120 | | 106.46 |
| MW-1 | | 4.990 | | 105.59 |
| TBM-1 (see note) | | 10.580 | | 100.00 |

**NOTES:**
1) Survey data collected with a Leica self-leveling leve
2) TBM-1 is located at the NW corner of House of Harley under the awning
3) 100.0 is an assumed datum for TBM-1

| Groundwater Elevations on 9-22-2021 | | | |
|---|---|---|---|
| **GW Well ID** | **MP Elev (ft)** | **MP Depth to Water** | **GW Elev (ft)** |
| MW-1 | 105.59 | 11.85 | 93.74 |
| MW-2 | 99.220 | 4.65 | 94.57 |
| MW-6 | 106.460 | 11.94 | 94.52 |

**NOTES:**
1)Depth to water collected with a Solinst water level meter
2)Measuring Point (MP) data collected from north side of wells

| Groundwater Elevations on 10-10-2021 | | | |
|---|---|---|---|
| **GW Well ID** | **MP Elev (ft)** | **MP Depth to Water** | **GW Elev (ft)** |
| MW-1 | 105.59 | 11.79 | 93.80 |
| MW-2 | 99.220 | 4.50 | 94.72 |
| MW-5 | 102.930 | 8.05 | 94.88 |
| MW-6 | 106.460 | 11.82 | 94.64 |

# ATTACHMENT D

Lab Reports and ADEC Laboratory QC Checklist

RESTORATION
Science & Engineering, LLC

**Laboratory Report of Analysis**

To: Restoration Science & Eng
911 West 8th Ave Suite 100
Anchorage, AK 99501

Report Number: **1216245**

Client Project: **House of Harley**

Dear Kyle Wiseman,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Chuck at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

_____

Chuck Homestead Date
Project Manager
Charles.Homestead@sgs.com



SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

## Case Narrative

SGS Client: **Restoration Science & Eng**
SGS Project: **1216245**
Project Name/Site: **House of Harley**
Project Contact: **Kyle Wiseman**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.



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## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

| | |
|---|---|
| * | The analyte has exceeded allowable regulatory or control limits. |
| ! | Surrogate out of control limits. |
| B | Indicates the analyte is found in a blank associated with the sample. |
| CCV/CVA/CVB | Continuing Calibration Verification |
| CCCV/CVC/CVCA/CVCB | Closing Continuing Calibration Verification |
| CL | Control Limit |
| DF | Analytical Dilution Factor |
| DL | Detection Limit (i.e., maximum method detection limit) |
| E | The analyte result is above the calibrated range. |
| GT | Greater Than |
| IB | Instrument Blank |
| ICV | Initial Calibration Verification |
| J | The quantitation is an estimation. |
| LCS(D) | Laboratory Control Spike (Duplicate) |
| LLQC/LLIQC | Low Level Quantitation Check |
| LOD | Limit of Detection (i.e., 1/2 of the LOQ) |
| LOQ | Limit of Quantitation (i.e., reporting or practical quantitation limit) |
| LT | Less Than |
| MB | Method Blank |
| MS(D) | Matrix Spike (Duplicate) |
| ND | Indicates the analyte is not detected. |
| RPD | Relative Percent Difference |
| TNTC | Too Numerous To Count |
| U | Indicates the analyte was analyzed for but not detected. |

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



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## Sample Summary

| Client Sample ID | Lab Sample ID | Collected | Received | Matrix |
|---|---|---|---|---|
| MW-6 | 1216245001 | 09/22/2021 | 09/22/2021 | Water (Surface, Eff., Ground) |
| MW-X | 1216245002 | 09/22/2021 | 09/22/2021 | Water (Surface, Eff., Ground) |
| MW-1 | 1216245003 | 09/22/2021 | 09/22/2021 | Water (Surface, Eff., Ground) |
| MW-2 | 1216245004 | 09/22/2021 | 09/22/2021 | Water (Surface, Eff., Ground) |
| Trip Blank | 1216245005 | 09/22/2021 | 09/22/2021 | Water (Surface, Eff., Ground) |

| Method | Method Description |
|---|---|
| 8270D SIM LV (PAH) | 8270 PAH SIM GC/MS LV |
| AK102 | DRO Low Volume (W) |
| AK101 | Gasoline Range Organics (W) |
| SW8260D | Volatile Organic Compounds (W) FULL |



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## Detectable Results Summary

Client Sample ID: **MW-6**
Lab Sample ID: 1216245001

**Polynuclear Aromatics GC/MS**
**Semivolatile Organic Fuels**

| Parameter | Result | Units |
|---|---|---|
| Phenanthrene | 0.0158J | ug/L |
| Diesel Range Organics | 0.385J | mg/L |

Client Sample ID: **MW-X**
Lab Sample ID: 1216245002

**Polynuclear Aromatics GC/MS**
**Semivolatile Organic Fuels**
**Volatile Fuels**

| Parameter | Result | Units |
|---|---|---|
| Phenanthrene | 0.0213J | ug/L |
| Diesel Range Organics | 0.367J | mg/L |
| Gasoline Range Organics | 0.0917J | mg/L |

Client Sample ID: **MW-1**
Lab Sample ID: 1216245003

**Semivolatile Organic Fuels**

| Parameter | Result | Units |
|---|---|---|
| Diesel Range Organics | 0.654 | mg/L |

Client Sample ID: **MW-2**
Lab Sample ID: 1216245004

**Semivolatile Organic Fuels**

| Parameter | Result | Units |
|---|---|---|
| Diesel Range Organics | 1.30 | mg/L |



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## Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245001
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Polynuclear Aromatics GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| 2-Methylnaphthalene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Acenaphthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Acenaphthylene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Anthracene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Benzo(a)Anthracene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Benzo[a]pyrene | 0.00960 | U | 0.0192 | 0.00596 | ug/L | 1 | | 10/01/21 00:17 |
| Benzo[b]Fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Benzo[g,h,i]perylene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Benzo[k]fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Chrysene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Dibenzo[a,h]anthracene | 0.00960 | U | 0.0192 | 0.00596 | ug/L | 1 | | 10/01/21 00:17 |
| Fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Fluorene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Indeno[1,2,3-c,d] pyrene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Naphthalene | 0.0481 | U | 0.0962 | 0.0298 | ug/L | 1 | | 10/01/21 00:17 |
| Phenanthrene | 0.0158 | J | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| Pyrene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:17 |
| **Surrogates** | | | | | | | | |
| 2-Methylnaphthalene-d10 (surr) | 64.2 | | 42-86 | | % | 1 | | 10/01/21 00:17 |
| Fluoranthene-d10 (surr) | 79.4 | | 50-97 | | % | 1 | | 10/01/21 00:17 |

## Batch Information

Analytical Batch: XMS12925
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 10/01/21 00:17
Container ID: 1216245001-C

Prep Batch: XXX45634
Prep Method: SW3535A
Prep Date/Time: 09/28/21 16:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245001
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.385 | J | 0.600 | 0.200 | mg/L | 1 | | 10/02/21 11:58 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 68.9 | | 50-150 | | % | 1 | | 10/02/21 11:58 |

## Batch Information

Analytical Batch: XFC16096
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 10/02/21 11:58
Container ID: 1216245001-A

Prep Batch: XXX45627
Prep Method: SW3520C
Prep Date/Time: 09/26/21 16:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



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## Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245001
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0450 | mg/L | 1 | | 09/28/21 19:13 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 89.7 | | 50-150 | | % | 1 | | 09/28/21 19:13 |

## Batch Information

Analytical Batch: VFC15849
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 09/28/21 19:13
Container ID: 1216245001-F

Prep Batch: VXX37921
Prep Method: SW5030B
Prep Date/Time: 09/28/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245001
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile GC/MS- Petroleum VOC Group**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| 1,2-Dibromoethane | 0.0375 U | | 0.0750 | 0.0180 | ug/L | 1 | | 10/04/21 18:45 |
| 1,2-Dichloroethane | 0.250 U | | 0.500 | 0.200 | ug/L | 1 | | 10/04/21 18:45 |
| 1,3,5-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| Benzene | 0.200 U | | 0.400 | 0.120 | ug/L | 1 | | 10/04/21 18:45 |
| Ethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| Isopropylbenzene (Cumene) | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| Methyl-t-butyl ether | 5.00 U | | 10.0 | 3.10 | ug/L | 1 | | 10/04/21 18:45 |
| Naphthalene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| n-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| o-Xylene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| P & M -Xylene | 1.00 U | | 2.00 | 0.620 | ug/L | 1 | | 10/04/21 18:45 |
| sec-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| tert-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| Toluene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 18:45 |
| Xylenes (total) | 1.50 U | | 3.00 | 1.00 | ug/L | 1 | | 10/04/21 18:45 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 99 | | 81-118 | | % | 1 | | 10/04/21 18:45 |
| 4-Bromofluorobenzene (surr) | 98.5 | | 85-114 | | % | 1 | | 10/04/21 18:45 |
| Toluene-d8 (surr) | 94.2 | | 89-112 | | % | 1 | | 10/04/21 18:45 |

## Batch Information

Analytical Batch: VMS21246
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 10/04/21 18:45
Container ID: 1216245001-H

Prep Batch: VXX37968
Prep Method: SW5030B
Prep Date/Time: 10/04/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-X**

Client Sample ID: **MW-X**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245002
Lab Project ID: 1216245

Collection Date: 09/22/21 13:00
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Polynuclear Aromatics GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| 2-Methylnaphthalene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Acenaphthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Acenaphthylene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Anthracene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Benzo(a)Anthracene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Benzo[a]pyrene | 0.00960 | U | 0.0192 | 0.00596 | ug/L | 1 | | 10/01/21 00:37 |
| Benzo[b]Fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Benzo[g,h,i]perylene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Benzo[k]fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Chrysene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Dibenzo[a,h]anthracene | 0.00960 | U | 0.0192 | 0.00596 | ug/L | 1 | | 10/01/21 00:37 |
| Fluoranthene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Fluorene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Indeno[1,2,3-c,d] pyrene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Naphthalene | 0.0481 | U | 0.0962 | 0.0298 | ug/L | 1 | | 10/01/21 00:37 |
| Phenanthrene | 0.0213 | J | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| Pyrene | 0.0240 | U | 0.0481 | 0.0144 | ug/L | 1 | | 10/01/21 00:37 |
| **Surrogates** | | | | | | | | |
| 2-Methylnaphthalene-d10 (surr) | 65.2 | | 42-86 | | % | 1 | | 10/01/21 00:37 |
| Fluoranthene-d10 (surr) | 75.7 | | 50-97 | | % | 1 | | 10/01/21 00:37 |

## Batch Information

Analytical Batch: XMS12925
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 10/01/21 00:37
Container ID: 1216245002-C

Prep Batch: XXX45634
Prep Method: SW3535A
Prep Date/Time: 09/28/21 16:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-X**

Client Sample ID: **MW-X**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245002
Lab Project ID: 1216245

Collection Date: 09/22/21 13:00
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.367 | J | 0.588 | 0.196 | mg/L | 1 | | 10/02/21 12:08 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 78.2 | | 50-150 | | % | 1 | | 10/02/21 12:08 |

## Batch Information

Analytical Batch: XFC16096
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 10/02/21 12:08
Container ID: 1216245002-A

Prep Batch: XXX45627
Prep Method: SW3520C
Prep Date/Time: 09/26/21 16:30
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-X**

Client Sample ID: **MW-X**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245002
Lab Project ID: 1216245

Collection Date: 09/22/21 13:00
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0917 | J | 0.100 | 0.0450 | mg/L | 1 | | 09/27/21 17:46 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 76.9 | | 50-150 | | % | 1 | | 09/27/21 17:46 |

## Batch Information

Analytical Batch: VFC15847
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 09/27/21 17:46
Container ID: 1216245002-E

Prep Batch: VXX37917
Prep Method: SW5030B
Prep Date/Time: 09/27/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



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Results of **MW-X**

Client Sample ID: **MW-X**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245002
Lab Project ID: 1216245

Collection Date: 09/22/21 13:00
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| 1,2-Dibromoethane | 0.0375 U | | 0.0750 | 0.0180 | ug/L | 1 | | 10/04/21 19:00 |
| 1,2-Dichloroethane | 0.250 U | | 0.500 | 0.200 | ug/L | 1 | | 10/04/21 19:00 |
| 1,3,5-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| Benzene | 0.200 U | | 0.400 | 0.120 | ug/L | 1 | | 10/04/21 19:00 |
| Ethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| Isopropylbenzene (Cumene) | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| Methyl-t-butyl ether | 5.00 U | | 10.0 | 3.10 | ug/L | 1 | | 10/04/21 19:00 |
| Naphthalene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| n-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| o-Xylene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| P & M -Xylene | 1.00 U | | 2.00 | 0.620 | ug/L | 1 | | 10/04/21 19:00 |
| sec-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| tert-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| Toluene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 19:00 |
| Xylenes (total) | 1.50 U | | 3.00 | 1.00 | ug/L | 1 | | 10/04/21 19:00 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 101 | | 81-118 | | % | 1 | | 10/04/21 19:00 |
| 4-Bromofluorobenzene (surr) | 97.8 | | 85-114 | | % | 1 | | 10/04/21 19:00 |
| Toluene-d8 (surr) | 96.9 | | 89-112 | | % | 1 | | 10/04/21 19:00 |

**Batch Information**

Analytical Batch: VMS21246
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 10/04/21 19:00
Container ID: 1216245002-H

Prep Batch: VXX37968
Prep Method: SW5030B
Prep Date/Time: 10/04/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-1**

Client Sample ID: **MW-1**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245003
Lab Project ID: 1216245

Collection Date: 09/22/21 13:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.654 | | 0.577 | 0.192 | mg/L | 1 | | 10/02/21 16:14 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 71.6 | | 50-150 | | % | 1 | | 10/02/21 16:14 |

## Batch Information

Analytical Batch: XFC16097
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 10/02/21 16:14
Container ID: 1216245003-A

Prep Batch: XXX45622
Prep Method: SW3520C
Prep Date/Time: 09/25/21 16:03
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **MW-2**

Client Sample ID: **MW-2**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245004
Lab Project ID: 1216245

Collection Date: 09/22/21 15:40
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 1.30 | | 0.600 | 0.200 | mg/L | 1 | | 10/02/21 14:46 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 72.2 | | 50-150 | | % | 1 | | 10/02/21 14:46 |

## Batch Information

Analytical Batch: XFC16097
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 10/02/21 14:46
Container ID: 1216245004-A

Prep Batch: XXX45622
Prep Method: SW3520C
Prep Date/Time: 09/25/21 16:03
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



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## Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245005
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0450 | mg/L | 1 | | 09/27/21 15:38 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 79.3 | | 50-150 | | % | 1 | | 09/27/21 15:38 |

## Batch Information

Analytical Batch: VFC15847
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 09/27/21 15:38
Container ID: 1216245005-A

Prep Batch: VXX37917
Prep Method: SW5030B
Prep Date/Time: 09/27/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **House of Harley**
Lab Sample ID: 1216245005
Lab Project ID: 1216245

Collection Date: 09/22/21 12:50
Received Date: 09/22/21 15:57
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile GC/MS- Petroleum VOC Group**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| 1,2-Dibromoethane | 0.0375 U | | 0.0750 | 0.0180 | ug/L | 1 | | 10/04/21 17:01 |
| 1,2-Dichloroethane | 0.250 U | | 0.500 | 0.200 | ug/L | 1 | | 10/04/21 17:01 |
| 1,3,5-Trimethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| Benzene | 0.200 U | | 0.400 | 0.120 | ug/L | 1 | | 10/04/21 17:01 |
| Ethylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| Isopropylbenzene (Cumene) | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| Methyl-t-butyl ether | 5.00 U | | 10.0 | 3.10 | ug/L | 1 | | 10/04/21 17:01 |
| Naphthalene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| n-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| o-Xylene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| P & M -Xylene | 1.00 U | | 2.00 | 0.620 | ug/L | 1 | | 10/04/21 17:01 |
| sec-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| tert-Butylbenzene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| Toluene | 0.500 U | | 1.00 | 0.310 | ug/L | 1 | | 10/04/21 17:01 |
| Xylenes (total) | 1.50 U | | 3.00 | 1.00 | ug/L | 1 | | 10/04/21 17:01 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 102 | | 81-118 | | % | 1 | | 10/04/21 17:01 |
| 4-Bromofluorobenzene (surr) | 102 | | 85-114 | | % | 1 | | 10/04/21 17:01 |
| Toluene-d8 (surr) | 100 | | 89-112 | | % | 1 | | 10/04/21 17:01 |

## Batch Information

Analytical Batch: VMS21246
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 10/04/21 17:01
Container ID: 1216245005-D

Prep Batch: VXX37968
Prep Method: SW5030B
Prep Date/Time: 10/04/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/12/2021 2:20:45PM

J flagging is activated

## Method Blank

Blank ID: MB for HBN 1826214 [VXX/37917]
Blank Lab ID: 1638587

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245002, 1216245005

## Results by **AK101**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Gasoline Range Organics | 0.0500U | 0.100 | 0.0450 | mg/L |
| **Surrogates** | | | | |
| 4-Bromofluorobenzene (surr) | 76.5 | 50-150 | | % |

## Batch Information

Analytical Batch: VFC15847
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: IJV
Analytical Date/Time: 9/27/2021 8:44:00AM

Prep Batch: VXX37917
Prep Method: SW5030B
Prep Date/Time: 9/27/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [VXX37917]
Blank Spike Lab ID: 1638588
Date Analyzed: 09/27/2021 09:20

Spike Duplicate ID: LCSD for HBN 1216245 [VXX37917]
Spike Duplicate Lab ID: 1638589
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245002, 1216245005

## Results by **AK101**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Gasoline Range Organics | 1.00 | 0.995 | 100 | 1.00 | 0.991 | 99 | ( 60-120 ) | 0.37 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 0.0500 | | 93 | 0.0500 | | 92 | ( 50-150 ) | 1.30 | |

## Batch Information

Analytical Batch: **VFC15847**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **IJV**

Prep Batch: **VXX37917**
Prep Method: **SW5030B**
Prep Date/Time: **09/27/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL



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## Method Blank

Blank ID: MB for HBN 1826259 [VXX/37921]
Blank Lab ID: 1638773

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245001

## Results by **AK101**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Gasoline Range Organics | 0.0500U | 0.100 | 0.0450 | mg/L |
| **Surrogates** | | | | |
| 4-Bromofluorobenzene (surr) | 83.1 | 50-150 | | % |

## Batch Information

Analytical Batch: VFC15849
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: IJV
Analytical Date/Time: 9/28/2021 9:17:00AM

Prep Batch: VXX37921
Prep Method: SW5030B
Prep Date/Time: 9/28/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [VXX37921]
Blank Spike Lab ID: 1638776
Date Analyzed: 09/28/2021 10:10

Spike Duplicate ID: LCSD for HBN 1216245 [VXX37921]
Spike Duplicate Lab ID: 1638777
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245001

## Results by **AK101**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Gasoline Range Organics | 1.00 | 0.969 | 97 | 1.00 | 1.01 | 101 | ( 60-120 ) | 4.10 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 0.0500 | | 90 | 0.0500 | | 96 | ( 50-150 ) | 6.10 | |

## Batch Information

Analytical Batch: **VFC15849**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **IJV**

Prep Batch: **VXX37921**
Prep Method: **SW5030B**
Prep Date/Time: **09/28/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL



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## Method Blank

Blank ID: MB for HBN 1826612 [VXX/37968]
Blank Lab ID: 1640363

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245001, 1216245002, 1216245005

## Results by **SW8260D**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2-Dibromoethane | 0.0375U | 0.0750 | 0.0180 | ug/L |
| 1,2-Dichloroethane | 0.250U | 0.500 | 0.200 | ug/L |
| 1,3,5-Trimethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Isopropylbenzene (Cumene) | 0.500U | 1.00 | 0.310 | ug/L |
| Methyl-t-butyl ether | 5.00U | 10.0 | 3.10 | ug/L |
| Naphthalene | 0.500U | 1.00 | 0.310 | ug/L |
| n-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| sec-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| tert-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Xylenes (total) | 1.50U | 3.00 | 1.00 | ug/L |
| **Surrogates** | | | | |
| 1,2-Dichloroethane-D4 (surr) | 100 | 81-118 | | % |
| 4-Bromofluorobenzene (surr) | 99.3 | 85-114 | | % |
| Toluene-d8 (surr) | 97.3 | 89-112 | | % |

## Batch Information

Analytical Batch: VMS21246
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: JMG
Analytical Date/Time: 10/4/2021 12:09:00PM

Prep Batch: VXX37968
Prep Method: SW5030B
Prep Date/Time: 10/4/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [VXX37968]
Blank Spike Lab ID: 1640364
Date Analyzed: 10/04/2021 12:24

Spike Duplicate ID: LCSD for HBN 1216245 [VXX37968]
Spike Duplicate Lab ID: 1640365
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245001, 1216245002, 1216245005

## Results by **SW8260D**

| | Blank Spike (ug/L) | | | Spike Duplicate (ug/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| 1,2,4-Trimethylbenzene | 30 | 29.4 | 98 | 30 | 29.6 | 99 | ( 79-124 ) | 0.83 | (< 20 ) |
| 1,2-Dibromoethane | 30 | 29.5 | 99 | 30 | 29.8 | 100 | ( 77-121 ) | 1.00 | (< 20 ) |
| 1,2-Dichloroethane | 30 | 26.6 | 89 | 30 | 28.3 | 94 | ( 73-128 ) | 6.30 | (< 20 ) |
| 1,3,5-Trimethylbenzene | 30 | 29.9 | 100 | 30 | 30.0 | 100 | ( 75-124 ) | 0.30 | (< 20 ) |
| Benzene | 30 | 29.1 | 97 | 30 | 29.8 | 99 | ( 79-120 ) | 2.30 | (< 20 ) |
| Ethylbenzene | 30 | 30.1 | 100 | 30 | 30.1 | 100 | ( 79-121 ) | 0.14 | (< 20 ) |
| Isopropylbenzene (Cumene) | 30 | 30.6 | 102 | 30 | 30.7 | 102 | ( 72-131 ) | 0.35 | (< 20 ) |
| Methyl-t-butyl ether | 45 | 39.6 | 88 | 45 | 41.5 | 92 | ( 71-124 ) | 4.90 | (< 20 ) |
| Naphthalene | 30 | 29.6 | 99 | 30 | 30.8 | 103 | ( 61-128 ) | 3.90 | (< 20 ) |
| n-Butylbenzene | 30 | 26.7 | 89 | 30 | 27.3 | 91 | ( 75-128 ) | 2.50 | (< 20 ) |
| o-Xylene | 30 | 30.2 | 101 | 30 | 30.6 | 102 | ( 78-122 ) | 1.20 | (< 20 ) |
| P & M -Xylene | 60 | 59.9 | 100 | 60 | 60.6 | 101 | ( 80-121 ) | 1.00 | (< 20 ) |
| sec-Butylbenzene | 30 | 30.1 | 100 | 30 | 30.5 | 102 | ( 77-126 ) | 1.50 | (< 20 ) |
| tert-Butylbenzene | 30 | 29.6 | 99 | 30 | 30.0 | 100 | ( 78-124 ) | 1.20 | (< 20 ) |
| Toluene | 30 | 28.3 | 94 | 30 | 29.6 | 99 | ( 80-121 ) | 4.50 | (< 20 ) |
| Xylenes (total) | 90 | 90.1 | 100 | 90 | 91.2 | 101 | ( 79-121 ) | 1.10 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 30 | | 99 | 30 | | 103 | ( 81-118 ) | 4.50 | |
| 4-Bromofluorobenzene (surr) | 30 | | 98 | 30 | | 98 | ( 85-114 ) | 0.22 | |
| Toluene-d8 (surr) | 30 | | 94 | 30 | | 98 | ( 89-112 ) | 4.70 | |

## Batch Information

Analytical Batch: **VMS21246**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **JMG**

Prep Batch: **VXX37968**
Prep Method: **SW5030B**
Prep Date/Time: **10/04/2021 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



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## Method Blank

Blank ID: MB for HBN 1826119 [XXX/45622]
Blank Lab ID: 1638142

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245003, 1216245004

## Results by **AK102**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Diesel Range Organics | 0.300U | 0.600 | 0.200 | mg/L |
| **Surrogates** | | | | |
| 5a Androstane (surr) | 86.3 | 60-120 | | % |

## Batch Information

Analytical Batch: XFC16097
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: IVM
Analytical Date/Time: 10/2/2021 11:39:00AM

Prep Batch: XXX45622
Prep Method: SW3520C
Prep Date/Time: 9/25/2021 4:03:31PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [XXX45622]
Blank Spike Lab ID: 1638143
Date Analyzed: 10/02/2021 11:49

Spike Duplicate ID: LCSD for HBN 1216245 [XXX45622]
Spike Duplicate Lab ID: 1638144
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245003, 1216245004

## Results by **AK102**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Diesel Range Organics | 20 | 17.5 | 88 | 20 | 18.3 | 92 | ( 75-125 ) | 4.50 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 5a Androstane (surr) | 0.4 | | 99 | 0.4 | | 101 | ( 60-120 ) | 1.50 | |

## Batch Information

Analytical Batch: **XFC16097**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **IVM**

Prep Batch: **XXX45622**
Prep Method: **SW3520C**
Prep Date/Time: **09/25/2021 16:03**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



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## Method Blank

Blank ID: MB for HBN 1826131 [XXX/45627]
Blank Lab ID: 1638181

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245001, 1216245002

## Results by **AK102**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Diesel Range Organics | 0.300U | 0.600 | 0.200 | mg/L |
| **Surrogates** | | | | |
| 5a Androstane (surr) | 79.9 | 60-120 | | % |

## Batch Information

Analytical Batch: XFC16096
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 10/2/2021 11:29:00AM

Prep Batch: XXX45627
Prep Method: SW3520C
Prep Date/Time: 9/26/2021 4:30:45PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [XXX45627]
Blank Spike Lab ID: 1638182
Date Analyzed: 10/02/2021 11:39

Spike Duplicate ID: LCSD for HBN 1216245 [XXX45627]
Spike Duplicate Lab ID: 1638183
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245001, 1216245002

## Results by **AK102**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Diesel Range Organics | 20 | 15.4 | 77 | 20 | 16.6 | 83 | ( 75-125 ) | 7.70 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 5a Androstane (surr) | 0.4 | | 78 | 0.4 | | 89 | ( 60-120 ) | 12.90 | |

## Batch Information

Analytical Batch: **XFC16096**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX45627**
Prep Method: **SW3520C**
Prep Date/Time: **09/26/2021 16:30**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



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## Method Blank

Blank ID: MB for HBN 1826220 [XXX/45634]
Blank Lab ID: 1638593

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1216245001, 1216245002

## Results by **8270D SIM LV (PAH)**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| 2-Methylnaphthalene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0100U | 0.0200 | 0.00620 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0100U | 0.0200 | 0.00620 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0156J | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| **Surrogates** | | | | |
| 2-Methylnaphthalene-d10 (surr) | 49.4 | 42-86 | | % |
| Fluoranthene-d10 (surr) | 69.6 | 50-97 | | % |

## Batch Information

Analytical Batch: XMS12925
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: LAW
Analytical Date/Time: 9/30/2021 10:54:00PM

Prep Batch: XXX45634
Prep Method: SW3535A
Prep Date/Time: 9/28/2021 4:30:18PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/12/2021 2:21:12PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1216245 [XXX45634]
Blank Spike Lab ID: 1638594
Date Analyzed: 09/30/2021 23:15

Spike Duplicate ID: LCSD for HBN 1216245 [XXX45634]
Spike Duplicate Lab ID: 1638595
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1216245001, 1216245002

## Results by **8270D SIM LV (PAH)**

| | Blank Spike (ug/L) | | | Spike Duplicate (ug/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| 1-Methylnaphthalene | 2 | 1.19 | 60 | 2 | 1.29 | 65 | ( 41-115 ) | 7.90 | (< 20 ) |
| 2-Methylnaphthalene | 2 | 1.16 | 58 | 2 | 1.26 | 63 | ( 39-114 ) | 8.60 | (< 20 ) |
| Acenaphthene | 2 | 1.40 | 70 | 2 | 1.50 | 75 | ( 48-114 ) | 7.40 | (< 20 ) |
| Acenaphthylene | 2 | 1.47 | 73 | 2 | 1.59 | 79 | ( 35-121 ) | 7.80 | (< 20 ) |
| Anthracene | 2 | 1.58 | 79 | 2 | 1.69 | 85 | ( 53-119 ) | 6.80 | (< 20 ) |
| Benzo(a)Anthracene | 2 | 1.61 | 80 | 2 | 1.69 | 84 | ( 59-120 ) | 4.90 | (< 20 ) |
| Benzo[a]pyrene | 2 | 1.67 | 84 | 2 | 1.81 | 90 | ( 53-120 ) | 7.70 | (< 20 ) |
| Benzo[b]Fluoranthene | 2 | 1.69 | 84 | 2 | 1.71 | 85 | ( 53-126 ) | 1.20 | (< 20 ) |
| Benzo[g,h,i]perylene | 2 | 1.70 | 85 | 2 | 1.84 | 92 | ( 44-128 ) | 8.30 | (< 20 ) |
| Benzo[k]fluoranthene | 2 | 1.64 | 82 | 2 | 1.90 | 95 | ( 54-125 ) | 14.50 | (< 20 ) |
| Chrysene | 2 | 1.60 | 80 | 2 | 1.74 | 87 | ( 57-120 ) | 8.40 | (< 20 ) |
| Dibenzo[a,h]anthracene | 2 | 1.73 | 86 | 2 | 1.85 | 92 | ( 44-131 ) | 6.70 | (< 20 ) |
| Fluoranthene | 2 | 1.57 | 79 | 2 | 1.69 | 85 | ( 58-120 ) | 7.20 | (< 20 ) |
| Fluorene | 2 | 1.50 | 75 | 2 | 1.62 | 81 | ( 50-118 ) | 7.70 | (< 20 ) |
| Indeno[1,2,3-c,d] pyrene | 2 | 1.71 | 86 | 2 | 1.84 | 92 | ( 48-130 ) | 6.90 | (< 20 ) |
| Naphthalene | 2 | 1.15 | 58 | 2 | 1.28 | 64 | ( 43-114 ) | 10.30 | (< 20 ) |
| Phenanthrene | 2 | 1.54 | 77 | 2 | 1.67 | 83 | ( 53-115 ) | 8.20 | (< 20 ) |
| Pyrene | 2 | 1.60 | 80 | 2 | 1.70 | 85 | ( 53-121 ) | 6.00 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 2-Methylnaphthalene-d10 (surr) | 2 | | 52 | 2 | | 57 | ( 42-86 ) | 7.90 | |
| Fluoranthene-d10 (surr) | 2 | | 71 | 2 | | 77 | ( 50-97 ) | 8.20 | |

## Batch Information

Analytical Batch: **XMS12925**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **LAW**

Prep Batch: **XXX45634**
Prep Method: **SW3535A**
Prep Date/Time: **09/28/2021 16:30**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/12/2021 2:21:14PM

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1216245

P#364091

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5 must be filled out.
...ne onset of analysis.

Page 1 of 1

**Section 1**

CLIENT: RESTORATION SCIENCE

CONTACT: K. WISEMAN

PHONE #:

PROJECT NAME: HOUSE OF HARLEY

PROJECT/ PWSID/ PERMIT#: 21-2339

REPORTS TO: K. WISEMAN

E-MAIL:

Profile #:

INVOICE TO: RSE, LLC

QUOTE #:

P.O. #: 21-2339

**Section 2**

| RESERVED for lab use | SAMPLE IDENTIFICATION | DATE mm/dd/yy | TIME HH:MM | MATRIX/ MATRIX CODE | # CONTAINERS | Comp Grab MI (Multi-incremental) | Analysis* DRO | GRO | P-VOC's | PAH | | | | | | REMARKS/LOC ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1AB | MW-6 | 9/22/21 | 1250 | W | 10 | G | X | X | X | X | | | | | | 10 CONTAINERS |
| 2AB | MW-X | 9/22/21 | 1300 | W | 10 | G | X | X | X | X | | | | | | 10 CONTAINERS |
| 3AB | MW-1 | 9/22/21 | 1350 | W | 2 | G | X | | | | | | | | | |
| 4AB | MW-2 | 9/22/21 | 1540 | W | 2 | G | X | | | | | | | | | |
| 5AB | | | | | | | | | | | | | | | | |

NOTE:
*The following analyses require specific method and/or compound list: BTEX, Metals, PFAS

**Section 5**

| | Date | Time | |
|---|---|---|---|
| Relinquished By: (1) | 9/22/21 | 1550 | Received By: |
| Relinquished By: (2) | Date | Time | Received By: |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | 09/22/21 | 1557 | Received For Laboratory By: |

**Section 4**

DOD Project? Yes (No)

Cooler ID: 9/22/21

Data Deliverable Requirements: ADEC

Requested Turnaround Time and/or Special Instructions:

REGULAR

Temp Blank °C: 2.8°C 060

or Ambient [ ]

Chain of Custody Seal: (Circle)

INTACT BROKEN (ABSENT)

Delivery Method: Hand Delivery [ ] Commerical Delivery [ ]

e-Sample Receipt Form

**SGS Workorder #:** **1216245** | 1216245

| Review Criteria | Condition (Yes, No, N/A) | Exceptions Noted below |
|---|---|---|
| **Chain of Custody / Temperature Requirements** | | Yes — Exemption permitted if sampler hand carries/delivers. |
| Were Custody Seals intact? Note # & location | N/A | absent |
| COC accompanied samples? | Yes | |
| DOD: Were samples received in COC corresponding coolers? | N/A | |
| | Yes | **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required |
| Temperature blank compliant* (i.e., 0-6 °C after CF)? | Yes | Cooler ID: 1 @ 2.8 °C Therm. ID: D60 |
| If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available. | | Cooler ID: @ °C Therm. ID: |
| | | Cooler ID: @ °C Therm. ID: |
| | | Cooler ID: @ °C Therm. ID: |
| | | Cooler ID: @ °C Therm. ID: |
| *If >6°C, were samples collected <8 hours ago? | Yes | |
| If <0°C, were sample containers ice free? | N/A | |
| Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed. | | |
| **Holding Time / Documentation / Sample Condition Requirements** | | Note: Refer to form F-083 "Sample Guide" for specific holding times. |
| Were samples received within holding time? | Yes | |
| Do samples **match COC**** (i.e.,sample IDs,dates/times collected)? | Yes | |
| **Note: If times differ <1hr, record details & login per COC. | | |
| ***Note: If sample information on containers differs from COC, SGS will default to COC information | | |
| Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals) | Yes | |
| | N/A | ***Exemption permitted for metals (e.g,200.8/6020A). |
| Were proper containers (type/mass/volume/preservative***)used? | Yes | |
| **Volatile / LL-Hg Requirements** | | |
| Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? | Yes | |
| Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)? | Yes | |
| Were all soil VOAs field extracted with MeOH+BFB? | N/A | |

**Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

## Sample Containers and Preservatives

| Container Id | Preservative | Container Condition | Container Id | Preservative | Container Condition |
|---|---|---|---|---|---|
| 1216245001-A | HCL to pH < 2 | OK | | | |
| 1216245001-B | HCL to pH < 2 | OK | | | |
| 1216245001-C | No Preservative Required | OK | | | |
| 1216245001-D | No Preservative Required | OK | | | |
| 1216245001-E | HCL to pH < 2 | OK | | | |
| 1216245001-F | HCL to pH < 2 | OK | | | |
| 1216245001-G | HCL to pH < 2 | OK | | | |
| 1216245001-H | HCL to pH < 2 | OK | | | |
| 1216245001-I | HCL to pH < 2 | OK | | | |
| 1216245001-J | HCL to pH < 2 | OK | | | |
| 1216245002-A | HCL to pH < 2 | OK | | | |
| 1216245002-B | HCL to pH < 2 | OK | | | |
| 1216245002-C | No Preservative Required | OK | | | |
| 1216245002-D | No Preservative Required | OK | | | |
| 1216245002-E | HCL to pH < 2 | OK | | | |
| 1216245002-F | HCL to pH < 2 | OK | | | |
| 1216245002-G | HCL to pH < 2 | OK | | | |
| 1216245002-H | HCL to pH < 2 | OK | | | |
| 1216245002-I | HCL to pH < 2 | OK | | | |
| 1216245002-J | HCL to pH < 2 | OK | | | |
| 1216245003-A | HCL to pH < 2 | OK | | | |
| 1216245003-B | HCL to pH < 2 | OK | | | |
| 1216245004-A | HCL to pH < 2 | OK | | | |
| 1216245004-B | HCL to pH < 2 | OK | | | |
| 1216245005-A | HCL to pH < 2 | OK | | | |
| 1216245005-B | HCL to pH < 2 | OK | | | |
| 1216245005-C | HCL to pH < 2 | OK | | | |
| 1216245005-D | HCL to pH < 2 | OK | | | |
| 1216245005-E | HCL to pH < 2 | OK | | | |
| 1216245005-F | HCL to pH < 2 | OK | | | |

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
QN - Insufficient sample quantity provided.

# Laboratory Data Review Checklist

Completed By:

Kyle Wiseman

Title:

Geologist, QEP

Date:

10/14/2021

Consultant Firm:

Restoration Science and Engineering, LLC

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1216245

Laboratory Report Date:

10/12/2021

CS Site Name:

House of Harley

ADEC File Number:

2100.38.425

Hazard Identification Number:

3744

1216245

Laboratory Report Date:

10/12/2021

CS Site Name:

House of Harley

**Note: Any N/A or No box checked must have an explanation in the comments box.**

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   Yes☒ No☐ N/A☐ Comments:

SGS is an approved laboratory.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   Yes☐ No☐ N/A☒ Comments:

Samples not transferred.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

CoC information completed properly.

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

Correct analyses requested.

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   Yes☒ No☐ N/A☐ Comments:

Sample cooler documented at 2.8° C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

Samples preserved properly.

1216245

Laboratory Report Date:

10/12/2021

CS Site Name:

House of Harley

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes☒ No☐ N/A☐ Comments:

Samples documented as being in proper condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes☐ No☐ N/A☒ Comments:

No discrepancies identified.

e. Data quality or usability affected?

Comments:

Data quality or usability unaffected.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

Case Narrative refers to sample receipt form as no QC failures were identified.

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☐ No☒ N/A☐ Comments:

No Discrepancies, errors, or QC failures identified by the lab.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

Corrective actions not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality or usability unaffected.

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5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

Correct analyses performed/reported as requested on CoC.

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

Hold times met.

c. All soils reported on a dry weight basis?

Yes☐ No☐ N/A☒ Comments:

Water samples only.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes☒ No☐ N/A☐ Comments:

LOQs less than cleanup levels.

e. Data quality or usability affected?

Data quality or usability unaffected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

Correct method blanks reported.

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Method blank results less than LOQ.

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iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

N/A

v. Data quality or usability affected?

Comments:

Data quality or usability unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

LCS/LCSD reported for each method.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☒ Comments:

N/A, water samples only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

%R reported within limits.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

RPD reported within limits.

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

N/A

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability unaffected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

**Note: Leave blank if not required for project**

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☐ Comments:

**Not required for project**

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☐ Comments:

**Not required for project**

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes☐ No☐ N/A☐ Comments:

**Not required for project**

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes☐ No☐ N/A☐ Comments:

**Not required for project**

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v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

**Not required for project**

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☐ Comments:

**Not required for project**

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability unaffected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes☒ No☐ N/A☐ Comments:

Correct surrogate recoveries reported.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes☒ No☐ N/A☐ Comments:

%R reported within limits.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

N/A

iv. Data quality or usability affected?

Comments:

Data quality or usability unaffected.

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e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes☒ No☐ N/A☐ Comments:

Trip Blank submitted and reported properly.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☒ No☐ N/A☐ Comments:

Cooler ID: 9/22/21

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Results less than LOQ.

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A.

v. Data quality or usability affected?

Comments:

Data quality or usability unaffected.

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes☒ No☐ N/A☐ Comments:

Field duplicated collected and submitted properly.

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

Submitted blind.

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iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where $R_1$ = Sample Concentration
$R_2$ = Field Duplicate Concentration

Yes☒ No☐ N/A☐ Comments:

Target analyte DRO was detected below the LOQ but above the LOD, with an RPD of 4.8%. PAH analyte Phenanthrene was detected below the LOQ, but above the LOD, with a RPD of 29.6%, though the values are very low (0.0158 J & 0.0213 J µg/L). Non target analyte GRO was detected below the LOQ in both the primary and duplicate, however the duplicate was detected above the LOD, thus the RPD is 58.9%. Sampler notes that MW-6, where the duplicate was collected, is directly adjacent to the road (Barbra Dr.) and multiple vehicles passed closely during sampling, thus depositing a fuel odor in the air.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

Data quality or usability unaffected.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☒ N/A☐ Comments:

New dedicated tubing was used for sampling and disposed of afterward. The water level indicator was decontaminated in a Three Stage Decon procedure (Alconox wash and two stage rinse). No other equipment went down hole during sampling.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

N/A.

ii. If above LOQ or project specified objectives, what samples are affected?
Comments:

N/A.

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iii. Data quality or usability affected?

Comments:

Data quality or usability unaffected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes☐ No☐ N/A☒ Comments:

N/A

# ATTACHMENT E

Select Site Photographs

RESTORATION
Science & Engineering, LLC

MW-6, North, Northwest

MW-1, Northeast


MW-2, Southeast

MW-2, Close up

# ATTACHMENT F

Scanned Field Notes

RESTORATION
Science & Engineering, LLC

9/22/21 KW 21-2339 40°F
HOUSE OF HARLEY SUN

1110 - ON SITE, SET UP AT MW-6, SEE GW SAMPLING FORM.
1141 - CALIBRATE RSE YSI-556 W/ 1413 Sp.Cond., 4 + 7 PH, GOOD CAL.
1250 - COLLECT MW-6 1250 + DUP MW-X 1300
1300 - THREE STAGE DECON WLI
1305 - SET UP AT MW-1, SEE GW SAMPLING FORM.
1350 - COLLECT MW-1 1350 FROM MW-1
1400 - THREE STAGE DECON WLI.
1405 - SET UP AT MW-2, SEE GW SAMPLING FORM.
1450 - POOR RECHARGE, PUMP WHEN NOT DRY.
1540 - COLLECT MW-2 1540 FROM MW-2
1545 - GAC ALL PURGE + DECON WATER ONSITE.
1550 - DEPART

KW.

MW-6

**RSE GROUNDWATER SAMPLING FORM** DATE: 9/22/21 WEATHER: 40°F SUN

**PROJECT NAME:** HOUSE OF HARLEY **SITE LOCATION:** **SAMPLER:** K.W.
**PROJECT NO.:** 21-2339 **WELL NUMBER:** MW-6 **COMPANY:**
**CONTACT #:**

**WATER COLUMN INFORMATION**
A) TOTAL DEPTH OF WELL (FT): 16.48
B) DEPTH TO WATER FROM TOC (FT): 11.94
C) COLUMN OF WATER IN WELL (FT): 4.54
*row "A" value minus row "B" value

**WELL LOCATION MAP AND SURVEY**
BARONA ST (WEST)
HOH PROP. (EAST)

**PURGE INFORMATION** 1-in = XX GAL/FT 2-IN = 0.17 GAL/FT
D) GALLONS PER FOOT OF 2-INCH SCREEN: 0.17
E) COLUMN OF WATER IN WELL (FT): 4.54
*value from row "C" in previous section
F) VOLUME OF WATER IN WELL (GAL): 0.7718 X3 = 2.3154
*row "D" value multiplied by row "E" value
TOTAL VOLUME REMOVED (GAL): 3.0

PURGE METHOD:
*e.g. peristaltic or bladder pump, Bailer

**WATER OBSERVATIONS**
LT BRN, NO SHEEN OR ODOR → YELLOW HUE → CLEAR

**WATER LEVEL AND FIELD PARAMETERS**
INSTRUMENT: PERI PUMP TUBING SET 4" BELOW W.L.I (WATER LEVEL)
*e.g. YSI 63, YSI 556, other

| PUMP | TIME | DTW | DRAW-DOWN (-) / RECHARGE (+) | GALLONS REMOVED | TEMP. (°C) | pH (pH Units) | CONDUCTIVITY (µS/cm) | SP. CONDUCTANCE (mS/cm) | SALINITY (ppt) | TURBIDITY (NTU) | $O_2$ (mg/L) | ORP REDOX (mV) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.5' | 1155 | 11.94 | | | | | | | | | | |
| 12.5' | 1200 | <12.5 | | 3/4 | 8.80 | 6.19 | 232 | 0.335 | — | — | 2.77 | 23.2 |
| 12.5' | 1205 | <12.5 | | 1 | 8.34 | 6.42 | 209 | 0.307 | — | — | 4.30 | 14.1 |
| 13.0 | 1210 | <13.0 | | 1.5 | 8.32 | 6.41 | 211 | 0.309 | — | — | 4.86 | 13.0 |
| 13.0 | 1220 | <13.0 | | 2.25 | 8.26 | 6.53 | 212 | 0.312 | — | — | 4.51 | 8.7 |
| 13.0 | | | | 3.0 | 8.27 | 6.64 | 208 | 0.306 | — | — | 4.80 | 5.2 |
| | | | | | | | | | | | | |

Odor or Sheen Observed? NO
Notes: LT BRN → YELLOW HUE → CLEAR

**SAMPLE INFORMATION (Also See Lab COC)**

| SAMPLE ID | DATE: | TIME | SAMPLER |
|---|---|---|---|
| MW-6 | 9/22 | 1250 | K.W. |
| MW-X | 9/22 | 1300 | |

SAMPLE ID: MW-6
FIELD DUPLICATE: MW-X
EQUIPMENT BLANK: —
TRIP BLANK: —

**LAB ANALYSIS REQUESTED:** P-VOCs, PAH, GRO, DRO

**COMMENTS:**

MW-1

**RSE GROUNDWATER SAMPLING FORM** DATE: 9/22/21 WEATHER: 45°F SUN

**PROJECT NAME:** HOUSE OF HARLEY **SITE LOCATION:** **SAMPLER:** KW.
**PROJECT NO.:** 21-2334 **WELL NUMBER:** MW-1 **COMPANY:**
**CONTACT #:**

**WATER COLUMN INFORMATION**

| | |
|---|---|
| A) TOTAL DEPTH OF WELL (FT): | 17.95 |
| B) DEPTH TO WATER FROM TOC (FT): | 11.85 |
| C) COLUMN OF WATER IN WELL (FT): *row "A" value minus row "B" value | 6.1 |

**WELL LOCATION MAP AND SURVEY**

EAST SIDE SANORA ST
BY 25 MPH SIGN
GRIZZLY COURT PROP
RIGHT OF WAY.

**PURGE INFORMATION**

1-in = XX GAL/FT
2-IN = 0.17 GAL/FT

PURGE METHOD:

*e.g. peristaltic or bladder pump, Bailer

| | |
|---|---|
| D) GALLONS PER FOOT OF 2-INCH SCREEN: | 0.17 |
| E) COLUMN OF WATER IN WELL (FT): *value from row "C" in previous section | 6.1 |
| F) VOLUME OF WATER IN WELL (GAL): *row "D" value multiplied by row "E" value | 1.037 x 3 = 3.111 |
| TOTAL VOLUME REMOVED (GAL): | 3.25 |

**WATER OBSERVATIONS**

CLEAR

**WATER LEVEL AND FIELD PARAMETERS**

INSTRUMENT:
*e.g. YSI 63, YSI 556, other

| TIME | DTW | DRAW-DOWN (-) / RECHARGE (+) | GALLONS REMOVED | TEMP. (°C) | pH (pH Units) | CONDUCTIVITY (mS/cm) | SP. CONDUCTANCE (mS/cm) | SALINITY (ppt) | TURBIDITY (NTU) | $O_2$ (mg/L) | ORP REDOX (mV) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pump | | | | | | | | | | | |
| 1314 | | | | | | | 0.393 | | | | |
| 12.5' 1318 | <12.5 | | 0.5 | 7.35 | 6.65 | 200 | [illegible] | — | — | 4.68 | -145.9 |
| 12.5' 1327 | <12.5 | | 1.5 | 6.95 | 6.60 | 324 | 0.495 | — | — | 2.29 | -108.2 |
| 12.5' 1336 | <12.5 | | 2.25 | 6.87 | 6.61 | 330 | 0.504 | — | — | 1.89 | -97.8 |
| 12.5' 1347 | <12.5 | | 3.25 | 6.82 | 6.62 | 330 | 0.505 | — | — | 4.01 | -91.7 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Odor or Sheen Observed?
Notes: NO SHEEN

PERI TUBING 4" BELOW WLI

**SAMPLE INFORMATION (Also See Lab COC)**

| SAMPLE ID | DATE: | TIME | SAMPLER |
|---|---|---|---|
| MW-1 | 9/22 | 1350 | KW. |

SAMPLE ID: MW-1 1350
FIELD DUPLICATE: —
EQUIPMENT BLANK: —
TRIP BLANK:

**LAB ANALYSIS REQUESTED:**
DRO, ONLY

**COMMENTS:**

MW-2

**RSE GROUNDWATER SAMPLING FORM** DATE: 9/22/21 WEATHER: 50°F SUN

**PROJECT NAME:** HOUSE OF HARLEY **SITE LOCATION:** **SAMPLER:** KW
**PROJECT NO.:** **WELL NUMBER:** MW2 **COMPANY:**
**CONTACT #:**

**WATER COLUMN INFORMATION**

A) TOTAL DEPTH OF WELL (FT): 14.92
B) DEPTH TO WATER FROM TOC (FT): 4.65
C) COLUMN OF WATER IN WELL (FT): 10.27
*row "A" value minus row "B" value

**WELL LOCATION MAP AND SURVEY**

AT NORTH DOOR

**PURGE INFORMATION**

1 IN WELL
1-in = XX GAL/FT
2-IN = 0.17 GAL/FT

D) GALLONS PER FOOT OF 2-INCH SCREEN: 0.1 X0.1
E) COLUMN OF WATER IN WELL (FT): 10.27
*value from row "C" in previous section
1.027
F) VOLUME OF WATER IN WELL (GAL): X3 = 3.081
*row "D" value multiplied by row "E" value
TOTAL VOLUME REMOVED (GAL): 2.5 GALLON

PURGE METHOD:
*e.g. peristaltic or bladder pump, Bailer 1" MICRO WELL

**WATER OBSERVATIONS**

POOR RECHARGE
LT BRN -> CLEAR

**WATER LEVEL AND FIELD PARAMETERS**

INSTRUMENT: LOWER PUMP TO WITHIN TOP 1' OF W.C.
*e.g. YSI 63, YSI 556, other

| TIME | DTW | DRAW-DOWN (-) / RECHARGE (+) | GALLONS REMOVED | TEMP. (°C) | pH (pH Units) | CONDUCTIVITY (mS/cm) | SP. CONDUCTANCE (mS/cm) | SALINITY (ppt) | TURBIDITY (NTU) | $O_2$ (mg/L) | ORP REDOX (mV) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PUMP | | | | | | | | | | | |
| 5' | | | | | | | | | | | |
| 14' | | | | | | | | | | | |
| 14.5' | | | | | | | | | | | |
| 13.0 | | | | | | | | | | | |
| 13.0 | | | | | | | | | | | |
| 1415 | | | | | | | | | | | |
| 1425 | | | 1 | 9.15 | 7.79 | 371 | 0.533 | — | — | 6.50 | -61.1 |
| 1430 | PAUSE WELL DRY (1445 | | | | PUMP ON | | | | | | |
| 1455 | | | 2 | 8.62 | 7.11 | 374 | 0.544 | — | — | 6.26 | -43.8 |
| 1520 | | | 2.5 | 8.31 | 7.10 | 380 | 0.558 | — | — | 5.78 | -41.0 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Odor or Sheen Observed? NO SHEEN OR ODOR
Notes:

**SAMPLE INFORMATION (Also See Lab COC)**

| SAMPLE ID | DATE: | TIME | SAMPLER |
|---|---|---|---|
| MW-2 | 9/22 | 1540 | KW. |

SAMPLE ID: MW-2
FIELD DUPLICATE:
EQUIPMENT BLANK: —
TRIP BLANK: — ~~COOLER~~ NO DRO

**LAB ANALYSIS REQUESTED:** DRO

**COMMENTS:** REPEAT PUMP UNTIL DRY AND WAIT FOR RECHARGE.

10/10/21 K.W 21-2339

45°F
SUN

1240 - ON SITE MOUSE OF HARLEY
RAIN IN PREVIOUS DAYS.

1245 - CHECK WATERLEVEL OF MW-6
- DEPTH TO WATER (DTW) BELOW TOP OF CASING (BTOC)
= 11.82 FEET (FT).

1251 - MW-5
DTW BTOC = 8.05 FT

1255 - MW-1
DTW BTOC = 11.79 FT

1300 - MW-2
DTW BTOC = 4.50 FT

1305 - THREE STAGE DECON + G.A.C. ON SITE.

1307 - DEPART.

# ATTACHMENT G

Conceptual Site Model

RESTORATION
Science & Engineering, LLC

# APPENDIX A

# HUMAN HEALTH SCOPING FORM

Print Form

# Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

**Site Name:** House of Harley

**File Number:** 2100.38.425

**Completed by:** Kyle Wiseman

**Introduction**

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

***General Instructions: Follow the italicized instructions in each section below.***

## 1. General Information:

**Sources** *(check potential sources at the site)*

- ☒ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other:

**Release Mechanisms** *(check potential release mechanisms at the site)*

- ☐ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

**Impacted Media** *(check potentially-impacted media at the site)*

- ☐ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

**Receptors** *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☐ Site visitor
- ☐ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☒ Other: Excavation could theoretically expose a worker to acute low concentration de minimis contamination.

* bgs - below ground surface

## 2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

*If the box is checked, label this pathway complete:* Complete

Comments:

Excavation could theoretically expose a worker to low concentration contamination, though current concentrations are so low that the worker may not be exposed to any visual or olfactory evidence of hydrocarbon impacts.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

*If both boxes are checked, label this pathway complete:* Complete

Comments:

Since the original excavation and removal of the UST and contaminated soil, it appears that contamination is subject to natural attenuation. Excavation next to the building foundation could theoretically expose a worker to low concentration contamination, though current concentrations are so low that the worker would not likely be exposed to any visual or olfactory evidence of hydrocarbon

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

*If both boxes are checked, label this pathway complete:* Incomplete

Comments:

Current groundwater hydrocarbon concentrations are below ADEC cleanup levels. Neither the subject property or surrounding properties (some separate contaminated sites) utilize the groundwater as a drinking water source. City water is present and RSE is not aware of any future intention to use shallow groundwater as drinking water in the area.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

*If both boxes are checked, label this pathway complete:* Incomplete

Comments:

There is a surface water creek bordering the site, however RSE has documented with multiple groundwater surveys and sampling of MW-3 and MW-4 that peripheral surface water is unimpacted. No contaminated surface water has been observed in relation to the site.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

*If all of the boxes are checked, label this pathway complete:* Incomplete

Comments:

The site is not used for hunting, fishing, or harvesting. The contamination concentrations are below ADEC cleanup levels. It is theoretically possible for a de minimis amount of hydrocarbons to come into contact with roots and other subsurface plant community members. Additionally, there is a surface water creek bordering the site, however RSE has documented with multiple groundwater surveys and

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

*If both boxes are checked, label this pathway complete:* Complete

Comments:

The contamination concentrations are below ADEC cleanup levels and are de minimis.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

*If both boxes are checked, label this pathway complete:* Complete

Comments:

The contamination concentrations are below ADEC cleanup levels are de minimis. The shop is a motorcycle repair outfit with lube oils, gas tanks, cleaning solvents and would likely have an air background of hydrocarbons in the facility.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

**Dermal Exposure to Contaminants in Groundwater and Surface Water**

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

*Check the box if further evaluation of this pathway is needed:* ☐

Comments:

Based on the pathway conditions above, dermal exposure is considered incomplete and does not require further evaluation.

**Inhalation of Volatile Compounds in Tap Water**

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

*Check the box if further evaluation of this pathway is needed*: ☐

Comments:

Based on the pathway conditions above, inhalation exposure is considered incomplete and does not require further evaluation.

**Inhalation of Fugitive Dust**

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - $PM_{10}$). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

*Check the box if further evaluation of this pathway is needed:* ☐

Comments:

Based on the pathway conditions above, inhalation exposure is considered incomplete and does not require further evaluation.

**Direct Contact with Sediment**

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

*Check the box if further evaluation of this pathway is needed:* ☐

Comments:

Based on the pathway conditions above, direct contact exposure is considered incomplete and does not require further evaluation.

**4. Other Comments** *(Provide other comments as necessary to support the information provided in this form.)*

Print Form

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: House of Harley
4334 Spenard Road, Anchorage, AK 99517 - ADEC File # 2100.38.425.

Completed By: David Nyman, PE Kyle Wiseman QEP

Date Completed: 10-19-21

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

**(1)**
*Check the media that could be directly affected by the release.*

**(2)**
*For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

**(3)**
*Check all exposure media identified in (2).*

**(4)**
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

**(5)**
*Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

**Current & Future Receptors**

| Media | Transport Mechanisms | Exposure Media | Exposure Pathway/Route | Residents (adults or children) | Commercial or industrial workers | Site visitors, trespassers, or recreational users | Construction workers | Farmers or subsistence harvesters | Subsistence consumers | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| ☐ Surface Soil (0-2 ft bgs) | ☐ Direct release to surface soil — check soil | ☑ soil | ☑ Incidental Soil Ingestion | | F,I | | F,I | | | |
| | ☐ Migration to subsurface — check soil | | ☑ Dermal Absorption of Contaminants from Soil | | F,I | | F,I | | | |
| | ☐ Migration to groundwater — check groundwater | | ☐ Inhalation of Fugitive Dust | | | | | | | |
| | ☐ Volatilization — check air | | | | | | | | | |
| | ☐ Runoff or erosion — check surface water | | | | | | | | | |
| | ☐ Uptake by plants or animals — check biota | | | | | | | | | |
| | ☐ Other (list): | | | | | | | | | |
| ☑ Subsurface Soil (2-15 ft bgs) | ☐ Direct release to subsurface soil — check soil | ☑ groundwater | ☑ Ingestion of Groundwater | | | | F,I | | | |
| | ☑ Migration to groundwater — check groundwater | | ☑ Dermal Absorption of Contaminants in Groundwater | | | | F,I | | | |
| | ☐ Volatilization — check air | | ☐ Inhalation of Volatile Compounds in Tap Water | | | | | | | |
| | ☐ Uptake by plants or animals — check biota | | | | | | | | | |
| | ☐ Other (list): | | | | | | | | | |
| ☑ Ground-water | ☐ Direct release to groundwater — check groundwater | ☐ air | ☐ Inhalation of Outdoor Air | | | | | | | |
| | ☐ Volatilization — check air | | ☐ Inhalation of Indoor Air | | | | | | | |
| | ☐ Flow to surface water body — check surface water | | ☐ Inhalation of Fugitive Dust | | | | | | | |
| | ☐ Flow to sediment — check sediment | | | | | | | | | |
| | ☐ Uptake by plants or animals — check biota | | | | | | | | | |
| | ☐ Other (list): | | | | | | | | | |
| ☐ Surface Water | ☐ Direct release to surface water — check surface water | ☐ surface water | ☐ Ingestion of Surface Water | | | | | | | |
| | ☐ Volatilization — check air | | ☐ Dermal Absorption of Contaminants in Surface Water | | | | | | | |
| | ☐ Sedimentation — check sediment | | ☐ Inhalation of Volatile Compounds in Tap Water | | | | | | | |
| | ☐ Uptake by plants or animals — check biota | | | | | | | | | |
| | ☐ Other (list): | | | | | | | | | |
| ☐ Sediment | ☐ Direct release to sediment — check sediment | ☐ sediment | ☐ Direct Contact with Sediment | | | | | | | |
| | ☐ Resuspension, runoff, or erosion — check surface water | | | | | | | | | |
| | ☐ Uptake by plants or animals — check biota | ☐ biota | ☐ Ingestion of Wild or Farmed Foods | | | | | | | |
| | ☐ Other (list): | | | | | | | | | |

- Contaminants are limited in extent, volume, and toxicity and are not expected to cause as significant exposure threat

Revised, 10/01/2010

# APPENDIX B

## SOIL CONTAMINANTS EVALUATED FOR DERMAL EXPOSURE

Soil contaminants are evaluated for dermal exposure when a specific absorption factor is available (EPA, 2004c). Where specific absorption factors were not available for an organic compound and it is not considered a volatile, an absorption fraction of 0.10 is applied. It is generally accepted that volatile compounds evaporate from skin before significant absorption occurs and are addressed through the inhalation exposure pathway.

| | | |
|---|---|---|
| Acenaphthene | Dichlorophenol, 2,4- | Naphthalene |
| Acenaphthylene | Dichlorophenoxy Acetic Acid, 2,4- | Nitroglycerin |
| Anthracene | Dieldrin | Nitroguanidine |
| Arsenic, Inorganic | Diethyl Phthalate | Nitroso-di-N-propylamine, N- |
| Benz[a]anthracene | Dimethylphenol, 2,4- | Nitrosodiphenylamine, N- |
| Benzo[a]pyrene | Dimethylphthalate | Nitrotoluene, m- |
| Benzo[b]fluoranthene | Dinitrobenzene, 1,2- | Nitrotoluene, p- |
| Benzo[g,h,i]perylene | Dinitrobenzene, 1,3- | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) |
| Benzo[k]fluoranthene | Dinitrobenzene, 1,4- | Octyl Phthalate, di-N- |
| Benzoic Acid | Dinitrophenol, 2,4- | Pentachlorophenol |
| Benzyl Alcohol | Dinitrotoluene, 2,4- | Pentaerythritol tetranitrate (PETN) |
| Bis(2-ethylhexyl)phthalate | Dinitrotoluene, 2,6- | Perfluorooctane Sulfonate (PFOS) |
| Butyl Benzyl Phthalate | Dinitrotoluene, 2-Amino-4,6- | Perfluorooctanoic acid (PFOA) |
| Cadmium (Diet) | Dinitrotoluene, 4-Amino-2,6- | Phenanthrene |
| Chlordane | Diphenylamine | Phenol |
| Chlordecone (Kepone) | Endrin | Polychlorinated Biphenyls (high risk) |
| Chloroaniline, p- | Ethylene Glycol | Pyrene |
| Chloronaphthalene, Beta- | Fluoranthene | TCDD, 2,3,7,8- |
| Chrysene | Fluorene | Tetryl (Trinitrophenylmethylnitramine) |
| Cresol, m- | Hexachlorocyclohexane, Alpha- | Toxaphene |
| Cresol, o- | Hexachlorocyclohexane, Beta- | Trichlorophenol, 2,4,5- |
| Cresol, p- | Hexachlorocyclohexane, Gamma- (Lindane) | Trichlorophenol, 2,4,6- |
| DDD | Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | Trichlorophenoxyacetic Acid, 2,4,5- |
| DDT | Indeno[1,2,3-cd]pyrene | Trichlorophenoxypropionic acid, -2,4,5 |
| Dibenz[a,h]anthracene | Isophorone | Trinitrobenzene, 1,3,5- |
| Dibenzofuran | Methoxychlor | Trinitrotoluene, 2,4,6- |
| Dibutyl Phthalate | Methylnaphthalene, 1- | |
| Dichlorobenzidine, 3,3'- | Methylnaphthalene, 2- | |

# APPENDIX C

## BIOACCUMULATIVE COMPOUNDS OF POTENTIAL CONCERN

Bioaccumulation factors (BAFs) and bioconcentration factors (BCFs) provide a direct indication of a chemical's ability to bioaccumulate, although they can vary widely depending on their basis (estimated or measured), the species used, and the measurement method. A BAF is the ratio of contaminants in tissues to the concentration in the surrounding environment (e.g., via food, sediment and water). A BCF is the ratio of the concentration of a chemical in an organism to its concentration in the surrounding water only.

In addition, it is common practice to use the log Kow to characterize the hydrophobicity, and thereby bioaccumulation potential, of organic compounds (EPA, 2000). The minimum criteria defining bioaccumulation potential for nonionic organic compounds is a log Kow greater than 3.5. The value of 3.5 was used as a minimum threshold based on observed relationships between the Kow of an unmetabolized chemical and its potential for biomagnification. Specifically, uptake efficiency tends to increase with increasing log Kow for values between 3 and 6 (Thomann, 1989). For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The ADEC list was developed by including organic compounds that either have a BAF or BCF equal to or greater than 1,000 from the 2015 EPA national bioaccumulation factor supplemental information table (Excel) (January 2016) for human health water quality criteria. Compounds without a BCF or BAF were retained when the log Kow generated from the ADEC cleanup level calculator was greater than 3.5. These compounds were entered into EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2016) to estimate the BCF. Compounds were included in the list when the BCF was greater than 1,000 and excluded when the BCF was less than 1000. The PBT Profiler is located at http://www.pbtprofiler.net/. Compounds with a log $K_{ow}$ greater than 3.5 that are not found in the PBT Profiler are included in the list of bioaccumulative compounds below. Inorganic compounds are also identified as bioaccumulative if they are listed as such by EPA (2000).

## Compounds from Table B-1 of 18 AAC 75.341 determined bioaccumulative based on the process above or otherwise footnoted.

| | | |
|---|---|---|
| Aldrin | DDT | Methoxychlor |
| Arsenic, Inorganic | Dibenz[a,h]anthracene | Methyl Mercury |
| Benz[a]anthracene | Dibutyl Phthalate | Nickel |
| Benzo[a]pyrene | Dieldrin | Perfluorooctane Sulfonate (PFOS)[1] |
| Benzo[b]fluoranthene | Dimethylphthalate | Perfluorooctanoic acid (PFOA)[2] |
| Benzo[g,h,i]perylene | Endrin | Phenanthrene |
| Benzo[k]fluoranthene | Fluoranthene | Polychlorinated Biphenyls |
| Butyl Benzyl Phthalate | Heptachlor | Selenium |
| Cadmium | Heptachlor Epoxide | Silver |
| Chlordane | Hexachlorobenzene | TCDD, 2,3,7,8- |
| Chlordecone (Kepone) | Hexachlorobutadiene | Toxaphene |
| Chromium(VI) | Hexachlorocyclohexane, Alpha- | Trichlorobenzene, 1,2,4- |
| Chrysene | Hexachlorocyclohexane, Gamma- (Lindane) | Tri-n-butyltin |
| Copper | Hexachloroethane | Zinc |
| DDD | Indeno[1,2,3-cd]pyrene | |
| DDE | Lead | |

[1]The weight of evidence for trophic magnification was deemed sufficient to consider PFOS to be bioaccumulative by the Stockholm Convention Persistent Organic Pollutants Review Committee (OECD 2002).

[2]The weight of evidence for trophic magnification was deemed sufficient to consider PFOA to be bioaccumulative by the Stockholm Convention Persistent Organic Pollutants Review Committee (UNEP 2015).

# APPENDIX D

## VOLATILE COMPOUNDS OF POTENTIAL CONCERN

A chemical is identified here as sufficiently volatile and toxic for further evaluation if the Henry's Law constant is greater than 1 x $10^{-5}$ atm-$m^3$/mol or vapor pressure is greater than 1 millimeter of mercury (mm HG), and the vapor concentration of the pure component exceeds the indoor air target risk level when the subsurface vapor source is in soil or saturated vapor concentration exceeds the target indoor air risk level, when the subsurface vapor source is in groundwater (EPA, 2015).

| | |
|---|---|
| **Acenaphthene*** | **Fluorene*** |
| **Acenaphthylene*** | Formaldehyde |
| Acetone | Heptachlor |
| Aldrin | Heptachlor Epoxide |
| **Anthracene*** | Hexachlorobenzene |
| **Benz[a]anthracene** | Hexachlorobutadiene |
| Benzaldehyde* | Hexachlorocyclopentadiene |
| **Benzene** | Hexachloroethane |
| Bis(2-chloroethyl)ether | **Hexane, N-** |
| Bromobenzene | Hexanone, 2- |
| Bromodichloromethane | Hydrazine |
| Bromoform | Isopropanol |
| Bromomethane | Mercury (elemental) |
| Butadiene, 1,3- | Methanol |
| Butanol, N-* | Methyl Ethyl Ketone (2-Butanone) |
| **Butylbenzene, n-*** | Methyl Isobutyl Ketone (4-methyl-2-pentanone) |
| **Butylbenzene, sec-*** | Methyl tert-Butyl Ether (MTBE) |
| **Butylbenzene, tert-*** | Methylene Chloride |
| Carbon Disulfide | **Methylnaphthalene, 1-*** |
| Carbon Tetrachloride | **Methylnaphthalene, 2-*** |
| Chlordane | **Naphthalene** |
| Chlorobenzene | Nitrobenzene |
| Chloroform | Nitrosodimethylamine, N- |
| Chloromethane | Nitrotoluene, o-* |
| Chloronaphthalene, Beta-* | **Phenanthrene*** |
| Chlorophenol, 2-* | Phosphorus, White* |
| Cumene | Polychlorinated Biphenyls |
| Cyanide (CN-) | **Propyl benzene** |
| **Cyclohexane** | **Pyrene*** |
| DDE, p,p'- | Styrene |
| Dibenzofuran* | TCDD, 2,3,7,8- |
| Dibromochloromethane* | Tetrachloroethane, 1,1,1,2- |
| Dibromoethane, 1,2- | Tetrachloroethane, 1,1,2,2- |
| Dibromomethane (Methylene Bromide) | Tetrachloroethylene |

| | |
|---|---|
| Dichlorobenzene, 1,2- | **Toluene** |
| Dichlorobenzene, 1,3- | Trichloro-1,2,2-trifluoroethane, 1,1,2- |
| Dichlorobenzene, 1,4- | Trichlorobenzene, 1,2,3-* |
| Dichlorodifluoromethane | Trichlorobenzene, 1,2,4- |
| Dichloroethane, 1,1- | Trichloroethane, 1,1,1- |
| Dichloroethane, 1,2- | Trichloroethane, 1,1,2- |
| Dichloroethylene, 1,1- | Trichloroethylene |
| Dichloroethylene, 1,2-cis-* | Trichlorofluoromethane* |
| Dichloroethylene, 1,2-trans-* | Trichloropropane, 1,2,3- |
| Dichloropropane, 1,2- | **Trimethylbenzene, 1,2,4-** |
| Dichloropropene, 1,3- | **Trimethylbenzene, 1,3,5-*** |
| Dioxane, 1,4- | Tri-n-butyltin* |
| Endosulfan* | Vinyl Acetate |
| Ethyl Chloride | Vinyl Chloride |
| **Ethylbenzene** | **Xylenes** |

Notes:

1. Bolded chemicals should be investigated when petroleum is present. If fuel was spilled that contained additives (e.g., 1, 2-dichloroethane, ethylene dibromide, methyl *tert*-butyl ether), these chemicals should also be investigated.
2. The chemicals listed here are found in Table B1 of 18 AAC 75.341 and Table C of 18 AAC 75.345 and are volatile compounds as defined in DEC's Procedures for Calculating Cleanup Levels. If a chemical is not on this list, contact DEC to determine if a target level should be calculated.
3. At this time, DEC does not require evaluation of total petroleum ranges (GRO, DRO, or RRO) for the indoor air inhalation (vapor intrusion) pathway.
4. "*" indicates DEC has not calculated an inhalation screening level for this chemical due to a lack of toxicity information for the inhalation exposure pathways. The DEC project manager may require further evaluation of this chemical. Contact the DEC risk assessor for additional assistance.

# APPENDIX E

## CONTAMINANT PROPERTIES USED TO EVALUATE TRANSPORT MECHANISMS

These parameters describe chemical properties of the site contaminants. Important chemical parameters used to evaluate transport mechanisms are shown below. The values specific to each chemical determine how easily a chemical is transported by various mechanisms. The default values used by the DEC can be found in the DEC's Procedures for Calculating Cleanup Levels (September 2016).

**Important Physical and Chemical Parameters Used to Evaluate Transport Mechanisms.**

| Purpose | Parameter | Symbol | Meaning |
|---|---|---|---|
| **Does the contaminant cling to organic matter or does it move with water?** | **Organic carbon partition coefficient** | **$K_{oc}$** | Provides a measure of the extent of chemical partitioning between organic carbon and water at equilibrium. The higher the $K_{oc}$, the more likely a chemical is to bind to soil or sediment than to remain in water. |
| | **Soil/water partition coefficient** | **$K_d$** | Provides a soil or sediment-specific measure of the extent of chemical partitioning between soil or sediment and water, unadjusted for dependence upon organic carbon. The higher the $K_d$, the more likely a chemical is to bind to soil or sediment than to remain in water. |
| | **Octanol coefficient** | **$K_{ow}$** | Provides a measure of the extent of chemical partitioning between water and octanol at equilibrium. The greater the $K_{ow}$, the more likely a chemical is to partition to octanol than to remain in water. Octanol is used as a surrogate for lipids (fat), and $K_{ow}$ can be used to predict bioconcentration in aquatic organisms. |
| **Does it dissolve in water?** | **Solubility** | | Is the upper limit on a chemical's dissolved concentration in water at a specified temperature? Aqueous concentrations in excess of solubility may indicate sorption onto sediments, the presence of solubilizing chemicals such as solvents, or the presence of a non-aqueous phase liquid. |
| **Does it vaporize?** | **Henry's Law Constant** | **$H_1$** | Provides a measure of the extent of chemical partitioning between air and water at equilibrium. The higher the Henry's Law |

| Purpose | Parameter | Symbol | Meaning |
|---|---|---|---|
| | | | constant, the more likely a chemical is to volatize than to remain in water. |
| **Does it vaporize?** | **Vapor Pressure** | | Is the pressure exerted by a chemical vapor in equilibrium with its solid or liquid form at any given temperature? It is used to calculate the rate of volatilization of a pure substance from a surface or in estimating a Henry's Law constant for chemicals with low water solubility. The higher the vapor pressure, the more likely a chemical is to exist in a gaseous state. |
| **Does it spread?** | **Movement of molecules** | **Diffusivity** | Describes the movement of a molecule in a liquid or gas medium as a result of differences in concentration. It is used to calculate the dispersive component of chemical transport. The higher the diffusivity, the more likely a chemical is to move in response to concentration gradients. |
| **Does it accumulate in living tissue?** | | **Bioconcentration Factor (BCF)** | Provides a measure of the extent of chemical partitioning at equilibrium between a biological medium such as fish tissue or plant tissue and an external medium such as water. The higher the BCF, the greater the accumulation in living tissue is likely to be. |
| **How easily does it break down over time?** | **Persistence** | **Media-Specific Half-Life** | Provides a relative measure of persistence of a chemical in a given medium, although actual values can vary greatly depending on site-specific conditions. The greater the half-life, the more persistent a chemical is likely to be. |

Source: *Risk Assessment Guidance for Superfund, Volume 1, Part A*, Exhibit 6-4 (EPA 1989).